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Buying by Railroads

Orders for 10,000 Cars Last Week

Lower Prices in Bars and in Pig Iron—Rail Inquiry for 1912

Whether the Steel Corporation suit has already been a factor in iron and steel markets is merely a matter of opinion. Where buying has fallen off, that has been the reason given, but against it is the fact that the Steel Corporation's own bookings—practically all for early shipment—were better than in several weeks.

That a long period of close competition is ahead will doubtless be taken as an obvious view of the situation the suit has created. Those longest in the steel trade will suggest in this connection that the low prices of periods like the present discourage extensions and are apt to be followed by times of rapidly expanding demand, inadequate capacity, and prices swinging as far up as before they had swung down.

The scale of operations at leading steel works has slackened but little. One Steel Corporation blast furnace went out in the Pittsburgh district and one was started up in the Chicago district. The statement of the corporation for the third quarter of the year was better than had been looked for. That for the final quarter may reflect some falling off both in volume and in prices, though the export trade continues to figure strongly.

There are more indications than have appeared in months that the railroads have about reached their limit in the postponement of equipment buying. The car orders of the past three years have amounted to about one year's legitimate requirements, counting that a 10 per cent. replacement should be made each year. In the week new car contracts have amounted to nearly 10,000. The New York Central followed its order for 2000 reported last week by placing 3000 for the Pittsburgh & Lake Erie, and it is reported to be still in the market for 5000. The Grand Trunk has bought 2000 cars and the Chesapeake & Ohio 2000. The B. & O. is now figuring on 5000 and the Southern Railway will buy 500.

Pittsburgh reports the beginning of rail inquiry for 1912, the Norfolk & Western being in the market for 25,000 tons, a part of which has already been placed. Two Eastern rail mills are closed down, having worked off all the business scheduled for 1911.

Bar business has shown some increase, but competition has grown keener and 1.10c., Pittsburgh, is common, with here and there a deeper cut. There are indications that the pace in bars is growing uncomfortably hot, and conditions are such that a stiffening in the price of any one manufacturer might lead to a general stand against further decline.

The wire trade has not been greatly stimulated by the lower prices of the past ten days. In the South

the Pittsburgh basing has been swept aside by recent transactions in wire and wire nails at prices lower than in many months.

Tin plate mills are now operated to about 50 per cent. of capacity. The status of the $3.40 basis for 1912 contracts has not yet been definitely settled, the larger business being still held back. A Canadian order just entered calls for 150,000 boxes for delivery next year. Sheet mills find buyers disposed to wait for further concessions; the mills, on the other hand, are not willing to take long contracts at to-day's prices.

The billet, rail and sheet-bar business of the Carnegie Steel Company in October was the largest month's total since March and exceeded that for September by 27,000 tons. The larger mills have only slightly shaded $19 for open hearth billets, but as low as $18.50 at mill is reported.

Pig iron markets have had one of the quietest weeks of the year. Raw material prices for 1912 are entering more largely into calculations of buyers and sellers and the trade is pretty much at sea on that question. Bessemer pig iron has declined to $14.25 at Valley furnace and sales of malleable Bessemer have been made as low as $12.50 at furnace in the Central West.

The Suit to Dissolve the Steel Corporation

The suit of the Government to dissolve the United States Steel Corporation comes at a time when market conditions are refuting with disastrous emphasis the charge that there is any monopoly or any restraint of trade in steel products. Surprising as the Government's action is, it is perhaps as well that it comes at this time; for as long as the Steel Corporation's status under the Sherman act went untested, so long, in the present state of public opinion on the trust issue, was the steel industry menaced by the possibility of such an attack. The inquiry of the Stanley Committee has indicated plainly that the Steel Corporation would be an issue in the coming national campaign, and judicial proceedings now may set forward the final decision of the question. On the other hand, there is the possibility that the litigation just begun may even outlast the Sherman act in its present shape. It is entirely conceivable that the developments in the case or the developments in industry resulting from this and other prosecutions will bring a decided change in sentiment. There are hopeful signs, too, in the protests already coming from some prominent figures in public life against the general attack on great corporations.

It has been said that the officers of the Government are only doing their plain duty in starting such prosecutions. That statement would be more convincing if the law were plain or even the decisions which are now made the occasion of activity by the Department of Justice. The strange feature of the Government's action against the Steel Corporation is that it is begun following Supreme Court decisions which made the application of the Sherman law less sweeping than preceding decisions made it. For 10 years the Steel Corporation has gone on without hindrance from the Government. Its form of organization and its policies have met with no official protest until the present year. This was not because it worked in the dark. Not a material statement in the voluminous petition filed at Trenton last week, apart from some that are untrue or misleading, is new. It is fair to ask, therefore, whether the Government itself is not in part responsible for much that has been developed in this formative period of the consolidations, under at least the sanction of tolerance.

So far as the inception of the Steel Corporation is concerned, there was much to find fault with in the acts of its promoters. It was a time when the lust for the enormous profits of industrial promotions was fairly riotous. After the panic and the depression of the 'nineties the tide of a new prosperity was rising rapidly. It seemed to many that co-operation and consolidation were to establish this prosperity so firmly that there could never be a return to the competition that in the iron trade had at times been ruinous. Quite as much did the Steel Corporation's stock and bond issues represent the capitalizing of this prosperity as the capitalizing of what measure of control it had of the machinery of production in iron and steel. And with the exception of 1904, the six years following its creation gave returns that helped to bear out the belief in a new era. The conditions seemed made for the purposes of the trust promoters. Never had the profits of iron and steel manufacture in this country paralleled those of the years in which the promoters of the Steel Corporation distributed their first holdings. It was not consolidation that produced these profits, as the Government's petition asserts, for all blast furnace and steel companies, with but few exceptions, shared them. Out of that prosperity came the millions for promotion and other millions of stock market profits based on the public's acceptance of the swollen scale of values at which properties were acquired for purposes of consolidation.

What the Government's action proposes is not to take away any of the scores of millions the promoters and those who sold out to them were able in that carnival of money-making to take out of the steel industry. That is plainly impossible. But for all the sins of the exploiters it is now the purpose to make the 120,000 stockholders of the Steel Corporation suffer. As this journal pointed out in the early years of the corporation's history, what was most open to censure in it was not the work of the managers of its great operations, in the markets and at the works. Its conversion plan and the things in its original putting together now most criticised by the Government were the product of banking and promoting interests, whose ownership in it is relatively small.

It is truth to say that as time has passed and the Steel Corporation has developed a policy in reference to its customers, its competitors, its employees and the public, there has been an evolution out of early mistakes and disfavor into a growing appreciation by its officers, of the responsibilities of its position and the demands of public opinion. It has been said that the cancellation of the Hill ore lease would not have been decided on, nor the reduction in ore freights, but for the threat of Government action. That may or may not be the fact. These steps, at all events, indicated a willingness to remove the grounds of complaint to which attention had been directed by the Commissioner of Corporations and the Stanley Committee, and suggested that further changes might be brought about if there were a disposition on the part of the Administration to conserve rather than to rend and destroy.

In the actions against the Standard Oil Company and the American Tobacco Company, the charge of monopoly was based on extermination of competition or a systematic policy of injury to competitors. The petition against the Steel Corporation founds the mo-

nopoly charge on its failure to injure its competitors. It is, no doubt, a surprise to the independent steel producers who attended the Gary dinners, to find that by such action they were participating in an unlawful restraint of trade and in the furtherance of monopoly in steel products. And if such co-operation as was secured under the Gary idea subjects the Steel Corporation to prosecution, it is hard to see how the other participants in that movement can escape. But there is high authority for the view that there is no monopoly or attempted monopoly under the Sherman law unless impediments are placed in the way of competitors. If the Supreme Court should so hold, the Government's case will fall, so far as it attempts to find in the co-operative movement one of the chief of the corporation's offendings.

In matter and manner the Government's petition reads more like a political campaign document than a pleading in a case involving momentous issues. Its recklessness of statement, its "thundering in the index" lead one to doubt at times whether it is intended to be taken at par. What has happened in the Standard Oil Company and the American Tobacco Company cases suggests that the Department of Justice will be satisfied with far less than is called for in its threatening petition. Serious thought need hardly be given to the Government demand that each of the constituent companies be dissolved. As we have said before, in relation to this proposal, it involves a physical impossibility. The American Tin Plate Company, for example, acquired about 40 companies. There are but 17 of these tin plate plants in existence today.

Many months will elapse before the final determination of the Steel Corporation suit. The steel trade will go on with the same freedom from control, it may be assumed, that exists to-day, and for a time the pace may be a hard one for some producers. Some of them, indeed, may fall by the way. Three years, four years, may go by with the dissolution proceedings still pending. Other governmental policies, more constructive, may by that time have supplanted that of attack upon large companies. There may even be such progress toward the solution of the trust question as to make it possible for corporation officers to know whether they are within the law without facing a suit for dissolution.

Keeping Down Idle Labor

Systematized records of employees' absence from work afford information which is of great value in keeping down the percentage of idle labor and by so doing reducing overhead costs of manufacturing. There is a wide difference between men in the constancy of their labor and the effort of the employer is always toward securing those who are the most dependable. In a general way, absence from work may be classified as the unavoidable, including sickness and bereavement; the result of dissipation, and the very important and not so easily controlled type, which may be subdivided between the lazy and the enthusiast whose private hobbies lead him from his regular employment. The ardent fisherman or hunter, the man whom wanderlust catches occasionally, and he who turns his skill to private ends, even to private gain—these are examples of the last-named subdivision. Accurate data as to the reasons given for absence and the duration, and the consequent losses to the owner, constitute an admirable check which must yield good returns.

In works where the health of employees is systematically studied the records are already proving of actual financial value, no small part of the result being in the better control of idleness. A complete record, going beyond the medical, would tell the whole story. The physical examination permits of getting close to the workman, and the physician may co-operate in records extending beyond his actual province, though, of course, he would be slow to reveal confidences.

The absence of a workman from his post in the shop breaks the rhythm of production. It is as important to maintain the balance of a plant in the personnel of the employees as to maintain the balance of equipment. In fact, the two elements merge one into the other.

We venture to state that the percentage of idle hours due to the absence of workmen, as compared with the full producing force, varies widely in different works. If records are not systematized, the percentage must depend entirely upon the personal factor of the superintendent and foreman; upon the degree of their leniency toward delinquents; upon their insistence that regularity of attendance shall be an all-essential element in retaining employment. If one man in 10 is out of a works, overhead costs must climb high, as compared with an average of one in 20. It may be accepted as an axiom that a plant where dependable men are employed throughout requires a smaller investment to manufacture a given product than one where the force is often disorganized by the absence of operators.

The study of employees' health should lead naturally to the remainder of the recording system. The habitually absent and tardy, and those who frequently desire to leave their work early, would soon be classed by themselves, and unless their failings were rectified others would take their places. As a moral influence in a plant, the system should have a most salutary effect.

British and American Export Trade

While there is no evidence that the increase in the iron and steel export trade of the United States in the past twelvemonth has been directly at the expense of the British trade, there is clear evidence that British trade has not expanded as ours has. Returns for the United States are available through August and for the United Kingdom through September. The United States exports in August were 2 per cent. less than the average monthly exports in the eight months, while British exports in September were 7 per cent. less than the average. These variations are negligible, and the totals for the eight and nine months periods respectively may be taken as representative of the movement for the year, as well as of the trend at the latest time for which information is available. Accordingly we estimate exports for each country for the calendar year on the basis of the returns thus far in, and compare these estimates with the actual results in the past two calendar years:

Iron and Steel Exports, Calendar Years—Gross Tons.

	United States.	Great Britain.
1909	1,239,708	4,373,381
1910	1,535,693	4,741,905
*1911	*2,160,000	4,100,000

*Estimated.

British exports increased from 1909 to 1910, but 1911 exports are falling just about midway between the records for those years. American exports, on

the other hand, increased from 1909 to 1910 and then showed a still larger increase in 1911. The gain appears to be at the rate of 625,000 tons a year, which is 41 per cent., while the British loss is only 240,000 tons, less than two-fifths as great as the American gain. The relative loss was very small, only 5 per cent., because the total British exports in 1910 were more than three times the American.

It is difficult to trace the British loss in detail, because it was spread over so many items. The actual exports in the nine months ending September were 3,554,633 tons in 1910 and 3,386,917 tons in 1911, a decrease of 168,000 tons. Pig iron lost 30,000 tons; spiegeleisen, ferronmanganese, etc., 22,000 tons; rails, 83,000 tons; wrought tubes, pipes and fittings, 8,000 tons, and "unenumerated" 28,000 tons. Many items showed slight gains. The only conspicuous loss was that in rails, from 346,777 tons to 263,356 tons, or 83,421 tons. Our own rail exports, comparing eight-month periods, increased from 243,244 tons to 311,732 tons, or 68,488 tons. One would naturally infer that England's loss was our gain, but the alignment in the international rail trade is such that it is not safe to draw inferences. There is great complaint in England that British participation in the international syndicate has been losing orders, while on behalf of the American mills it is stated that there is no participation in the international agreement.

Whatever may be developed as to the relation between British and American exports, it is a fact that the British economic position in iron and steel is not good. Imports and exports, covering scrap, pig iron, rolled material, castings, forgings, etc., but not finished machinery, have been as follows in gross tons in the first nine months of the years indicated:

	Imports.	Exports.
1907.....	663,781	4,135,960
1908.....	808,637	3,204,366
1909.....	897,180	3,192,304
1910.....	1,022,942	3,554,633
1911.....	1,336,374	3,396,917

The exports have shown considerable fluctuations, with no regular movement, while the imports have grown rapidly, and with remarkable steadiness. They have exactly doubled in four years. The character of some of the imports is surprising. Below we give a table showing all the items in which the movement in the first nine months of this year exceeded 30,000 tons, or a rate of 40,000 tons a year:

British Imports, First Nine Months—Gross Tons.

	1907.	1911.
Pig iron, all kinds.....	71,924	129,981
Scrap (except rails).....	20,594	38,386
Blooms, billets, slabs.....	*220,491	344,204
Sheet and tin plate bars.....	.....	243,405
Wrought-iron bars.....	45,669	86,938
Girders, etc.....	67,363	55,363
Steel bars and shapes.....	15,515	68,048
Steel plates, ⅛-in. up.....	27,310	65,645
Wire rods.....	24,072	66,628
Wire	45,159	31,188
Wire nails.....	28,772	66,628
All other.....	96,912	139,960
Total	663,781	1,336,374

*Includes sheet and tin plate bars, also ingots; ingots not included in 1911.

The imports of ingots, blooms, billets, slabs, sheet and tin plate bars, etc., in the first nine months of 1907 amounted to 220,491 tons, increasing in the corresponding period this year to 344,204 tons of blooms, billets and slabs and 243,405 tons of sheet and tin plate bars, as shown above, while imports of ingots amount to 17,195 tons, making a grand total of 604,804 tons, an increase of 384,313 tons, or 174 per cent. This material came chiefly from Germany and the United States. Our total exports, in eight months of this year, amounted to 161,424 tons, and probably went mainly to England.

German and American unfinished steel created a scare in England more than a dozen years ago, but the movement did find a large number of defenders, who pointed out that British rolling mills would not be importing it if they were not able to finish it and sell the finished product, and as similar finished products were being exported, the operation was not, on the whole, disadvantageous. It was better to do this than not export at all. Time has not brought accretions to the ranks, and there are now relatively few to be found who will defend these unfinished steel imports as a blessing in any disguise. The Iron and Coal Trades Review makes no attempt to do so. Commenting on a portion of the figures we have cited, it says:

> Turning to the imports, it is very unsatisfactory to find that our total imports for the nine months were nearly 1,300,000 tons. Deducting imports of pig iron, it appears that at the present moment our imports of iron and steel are at the rate of 48 per cent. of our exports. For a country which up to a few years ago was not only the premier, but practically the only country exporting iron and steel on a large scale, these figures have a grave significance. The greater part of the imports, of course, consists of billets and sheet bars, of which we imported in the first nine months of the year 587,000 tons, as against 357,000 tons and 406,000 tons in the corresponding periods of 1910 and 1909 respectively. Whatever may be the position of the home or export trade in iron and steel, the import trade is clearly booming.

As iron and steel manufacture was practiced years ago, the successive operations being distinct and usually affording a considerable profit, the character of business England does might be considered more or less satisfactory. We at one time had a blast furnace industry (which indeed imported a great deal of ore) selling pig iron to steel works, while the steel works in turn sold unfinished steel to rolling mills. There were even wire nail works which bought wire, and corrugating plants which bought flat sheets, but the old order has passed away. In the first nine months of this year Great Britain imported 4,972,955 tons of iron ore, exporting only 5,374 tons; exported 870,757 tons of pig iron, importing only 129,981 tons; imported 604,804 tons of unfinished steel, exporting only 3,595 tons, and exported about 2,602,978 tons of finished products, importing about 580,398 tons. This back-and-forth movement cannot win in the long run. Success is to be attained by carrying the operations from the raw material in the ground to the finished products ready for actual use.

Attention has been called to the remarkable reversal in our tin plate movement, whereby our imports have this year dropped to very small proportions, while our exports have become large, and instead of importing much more than we export we are now exporting much more than we import. This reversal was brought about by American mills capturing practically all of the packers' business, these packers having formerly used Welsh tin plate, imported with benefit of drawback. As noted in these columns October 12, the tin plate movement in the first eight months of 1910 and 1911 has been as follows:

	1910.	1911.
Imports	51,082	12,706
Exports	7,586	36,094

In July and August the imports were 533 tons and

the exports 10,517 tons, showing a balance of exports over imports of 5,000 tons per month, while last year the imports exceeded the exports by a balance of 4,500 tons a month, thus indicating a reversal of about 100,000 tons a year in the tin plate movement.

It is most interesting to observe from the British statistics that this very sudden increase in our tin plate trade was not accompanied by any decrease whatever in the British trade. The total tin plate exports in the first nine months of this year were 364,577 gross tons, of which 12,780 tons went to the United States. We have computed the rate per year from these figures for nine months, and compare the tonnages with the tonnages for full calendar years in the following table, representing gross tons:

British Tin Plate Exports.

	To United States.	Grand total.
1904	71,862	359,634
1905	63,052	354,951
1906	61,518	374,802
1907	58,920	405,329
1908	60,602	402,869
1909	64,446	439,804
1910	73,636	483,020
1911	*17,000	*486,000

*Estimated.

This year, therefore, British tin plate exports promise to make a new tonnage record, and this despite not only the loss of the American trade, to the extent of 57,000 tons, but also the establishment of American exports at a rate 43,000 tons greater than last year. That, however, does not necessarily imply great staying powers on the part of the Welsh tin plate trade. The demand in foreign markets must have increased very decidedly and as South Wales has had the trade for so many years it could hardly be otherwise than that it should get the orders. The astonishing thing is that the American mills could capture the first 100,000 tons of business not protected by the tariff. To add 100,000 tons to the first 100,000 tons would not represent nearly so remarkable a development. The tonnages are not large for our own trade. Thus British exports have not yet reached half a million tons in a year, and the production cannot greatly exceed that amount, because the domestic consumption of tin plate is relatively small. Our own production last year was nearly three-quarters of a million tons, and this year's tonnage promises to exceed the three-quarters of a million mark.

Steel Foundry Extensions.—The Scullin-Gallagher Iron & Steel Company, St. Louis, manufacturer of open hearth steel castings, recently purchased three cranes of 30, 10 and 5 tons capacity from the Alliance Machine Company, Alliance, Ohio, and two cranes of 25 and 10 tons capacity from the Niles-Bement-Pond Company, New York. This equipment together with the six new mold drying ovens, new core room and five ovens, and the extensions to the main foundry, annex and chipping shops of the company's No. 2 plant, will more than double its capacity for making miscellaneous steel castings. The No. 1 plant, the capacity of which was doubled less than a year ago by the addition of three traveling cranes, 18 new jib cranes and a very large air compressor of 5500 cu. ft. of free air per min. capacity at 125 lb. pressure, will continue to be employed entirely in the production of steel castings for railroad purposes.

The Edwin B. Stimpson Company is sending out illustrated circulars calling attention to its new home at 68 and 70 Franklin avenue, between Flushing and Park avenues, Brooklyn, N. Y. The company has at this address a new three-story building of its own, which is equipped with machinery for the manufacture of perforated metals, buckles, eyelets, washers, metal checks, etc.

The Steel Corporation's Quarterly Statement

The United States Steel Corporation has issued its statement of earnings, covering its subsidiary companies, for the quarter ending September 30, 1911. It compares as follows with the corresponding quarter of 1910:

	1911.	1910.
July earnings	$8,750,467	$12,132,188
August earnings	10,710,145	13,132,755
September earnings	10,062,113	12,100,244
Total after deducting all expenses incident to operations, including ordinary repairs and maintenance of plants, and interest on bonds and fixed charges of subsidiary companies	29,522,725	37,365,187
Less charges and appropriations for sinking funds on bonds of subsidiary companies and depreciation and extraordinary replacement funds	6,806,568	6,316,462
Net earnings	22,716,157	31,048,725
Deduct interest for the quarter on U. S. Steel Corporation bonds outstanding	5,761,157	5,824,146
Sinking funds on the U. S. Steel Corporation bonds:		
Installments	1,012,500	1,012,500
Interest on bonds in sinking funds	538,306	475,316
	7,311,963	7,311,962
Balance	15,404,194	23,736,763
Dividends for the quarter on stocks of U. S. Steel Corporation:		
Preferred, 1¾ per cent	6,304,919	6,304,919
Common, 1¼ per cent	6,353,781	6,353,781
Surplus for the quarter	2,745,494	11,078,063
Less appropriation on account of expenditures made and to be made on authorized appropriations for new plants, construction, etc.	.....	7,500,000
Balance of surplus for the quarter	$2,745,494	$3,578,063
Unfilled orders on hand September 30, tons	3,611,317	3,158,106

The earnings for the quarter ending June 30, 1911, were $28,108,520, and for the quarter ending March 31 were $23,519,203.

The unfilled orders June 30, 1911, were 3,361,058 tons, and March 31 were 3,447,301 tons.

Minnesota Iron Ore Valuations

The Minnesota Tax Commission has completed its work of equalizing the values of the iron mineral properties of St. Louis, Itasca and Lake counties. In 1910 the shipments were 26,191,981 tons and on May 1, 1911, there were in stock piles and assessed as personalty 6,719,124 tons. These two items are deducted from the total remaining tonnage of 1910. During 1910 there was developed by drilling new ore amounting to 53,011,393 tons, which is now added.

The final figures for the 1911 valuation are based upon 1,368,236,579 tons reported for taxation and assessed for $232,465,603 (which includes $900,000 for well-located prospects). Adding $3,340,920, assessment on prospects and mineral lands within the Mesaba ore belt, the total assessment on tonnage and mineral properties for 1911 is $235,806,523. The 1910 valuation was based upon 1,348,136,221 tons which, with prospects and mineral lands, was assessed at $224,669,845. The 1911 assessment shows a net increase over 1910 of 20,100,358 tons and of $11,136,678.

Machine for Close Measuring Available Free.—The New Departure Mfg. Company has installed at its Western branch, 1016 Ford Building, Detroit, Mich., a measuring machine which is available to the trade in general for close measuring. This service is offered without cost. The machine positively indicates variations of one-fortieth of one one-thousandth of an inch and is a duplicate of the machine used by the company at its factory in Bristol, Conn., in accurately manufacturing gauges used for inspecting New Departure ball bearings. This machine is so delicate that it is affected by temperature. In setting the machine, a microscope is used in which are hair lines which correspond to similar lines on a graduated bar. A complete set of measuring plugs and disks used for measuring the bore and diameter of New Departure bearings has also been placed in the Detroit offices. The correctness of these measuring instruments has been certified by the United States Bureau of Standards.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Nov. 1, 1911.	Oct. 25, 1911.	Oct. 4, 1911.	Nov. 2, 1910.
PIG IRON, Per Gross Ton:				
Foundry No. 2 standard, Philadelphia	$15.00	$15.00	$15.00	$15.75
Foundry No. 2, Valley furnace.	13.25	13.25	13.25	14.00
Foundry No. 2 Southern, Cincinnati	13.25	13.25	13.25	14.25
Foundry No. 2, Birmingham, Ala.	10.00	10.00	10.00	11.00
Foundry No. 2, at furnace, Chicago*	14.35	14.35	14.50	16.00
Basic, delivered, eastern Pa.	14.50	14.50	14.50	14.75
Basic, Valley furnace	12.50	12.50	12.60	13.00
Bessemer, Pittsburgh	*15.15*	15.40	15.55	15.90
Gray forge, Pittsburgh	13.65	13.65	13.65	14.15
Lake Superior charcoal, Chicago	16.50	16.50	16.50	18.00
COKE, CONNELLSVILLE, Per Net Ton, at Oven:				
Furnace coke, prompt shipment	1.50	1.50	1.50	1.55
Furnace coke, future delivery	1.55	1.55	1.60	1.70
Foundry coke, prompt shipment	1.80	1.80	1.85	2.10
Foundry coke, future delivery	2.00	2.00	2.10	2.25
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	20.00	20.00	20.00	23.50
Open hearth billets, Pittsburgh	19.00	19.00	19.00	23.50
Forging billets, Pittsburgh	24.00	24.00	25.00	28.50
Open hearth billets, Philadelphia	21.40	21.40	21.40	26.00
Wire rods, Pittsburgh	26.00	26.00	26.00	28.50
OLD MATERIAL, Per Gross Ton:				
Iron rails, Chicago	**14.50**	13.50	13.75	16.00
Iron rails, Philadelphia	*15.50*	16.00	16.50	18.00
Car wheels, Chicago	*12.00*	12.50	12.50	13.50
Car wheels, Philadelphia	*11.50*	11.75	11.75	13.75
Heavy steel scrap, Pittsburgh	12.00	12.00	12.25	14.25
Heavy steel scrap, Chicago	9.50	9.50	10.00	12.25
Heavy steel scrap, Philadelphia	11.75	11.75	12.00	13.50
FINISHED IRON AND STEEL, Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.20	1.20	1.22½	1.40
Iron bars, Pittsburgh	1.20	1.20	1.20	1.45
Iron bars, Chicago	1.15	1.15	1.20	1.35
Steel bars, Pittsburgh	1.10	1.10	1.15	1.40
Steel bars, tidewater, New York	1.26	1.26	1.31	1.56
Tank plates, Pittsburgh	1.15	1.15	1.20	1.40
Tank plates, tidewater, New York	1.31	1.31	1.36	1.56
Beams, Pittsburgh	*1.15*	1.20	1.25	1.40
Beams, tidewater, New York	*1.31*	1.36	1.41	1.56
Angles, Pittsburgh	*1.15*	1.20	1.25	1.40
Angles, tidewater, New York	*1.31*	1.36	1.41	1.56
Skelp, grooved steel, Pittsburgh	1.15	1.15	1.15	1.25
Skelp, sheared steel, Pittsburgh	1.25	1.25	1.25	1.35
SHEETS, NAILS AND WIRE, Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	1.85	1.85	1.85	2.20
Wire nails, Pittsburgh	1.60	1.60	1.65	1.70
Cut nails, Pittsburgh	1.50	1.50	1.50	1.60
Barb wire, galv., Pittsburgh	1.90	1.90	1.95	2.00
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	*12.50*	12.62½	12.50	12.87½
Electrolytic copper, New York	*12.37½*	12.50	12.25	12.75
Spelter, St. Louis	6.20	6.20	5.85	5.80
Spelter, New York	6.35	6.35	6.00	5.95
Lead, St. Louis	4.15	4.15	4.32½	4.27½
Lead, New York	4.25	4.25	4.47½	4.40
Tin, New York	*41.62½*	42.05	40.15	36.80
Antimony, Hallett, New York	7.70	7.70	7.70	7.75
Tin plate, 100-lb. box, New York	$3.64	$3.64	$3.84	$3.84

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.15c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in. on thinnest edge	.10
Gauges under 3-16 in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates) 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft. inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in., and angles, 3 to 6 in. on one or both legs, ¼ in. and over, 1.15c. to 1.20c. Other shapes and sizes are quoted as follows:

	Cents per lb.
I-beams over 15 in.	1.20 to 1.25
H-beams over 18 in.	1.30 to 1.35
Angles over 6 in.	1.20 to 1.25
Angles, 3 in. on one or both legs, less than ¼ in. thick, plus full extras as per steel bar card Sept. 1, 1909	1.20 to 1.25
Tees, 3 in. and up	1.20 to 1.25
Zees, 3 in. and up	1.15 to 1.20
Angles, channels and tees, under 3 in., plus full extras as per steel bar card Sept. 1, 1909	1.20 to 1.25
Deck beams and bulb angles	1.45 to 1.50
Hand rail tees	2.00 to 2.15
Checkered and corrugated plates	2.00 to 2.15

Sheets.—Makers' prices for mill shipments on sheets of U. S. standard gauge, in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows:

Blue Annealed Sheets.

	Cents per lb.
Nos. 3 to 8	1.25 to 1.30
Nos. 9 and 10	1.35 to 1.40
Nos. 11 and 12	1.40 to 1.45
Nos. 13 and 14	1.45 to 1.50
Nos. 15 and 16	1.55 to 1.60

Box Annealed Sheets, Cold Rolled.

	One Pass.	Three Pass.
Nos. 10 to 12	1.50 to 1.55	.....
Nos. 13 and 14	1.55 to 1.60	.....
Nos. 15 and 16	1.60 to 1.65	1.70 to 1.75
Nos. 17 to 21	1.65 to 1.70	1.75 to 1.80
Nos. 22, 23 and 24	1.70 to 1.75	1.80 to 1.85
Nos. 25 and 26	1.75 to 1.80	1.85 to 1.90
No. 27	1.80 to 1.85	1.90 to 1.95
No. 28	1.85 to 1.90	1.95 to 2.00
No. 29	1.90 to 1.95	2.00 to 2.05
No. 30	2.00 to 2.05	2.10 to 2.15

Galvanized Sheets, of Black Sheet Gauge.

Nos. 10 and 11	1.85 to 1.90
Nos. 12, 13 and 14	1.95 to 2.00
Nos. 15, 16 and 17	2.10 to 2.15
Nos. 18 to 22	2.25 to 2.30
Nos. 23 and 24	2.35 to 2.40
Nos. 25 and 26	2.55 to 2.60
No. 27	2.70 to 2.75
No. 28	2.85 to 2.90
No. 29	2.95 to 3.00
No. 30	3.15 to 3.20

All above rates on sheets are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice, as also are the following base prices per square for painted and galvanized roofing sheets, with 2½-in corrugations.

Corrugated Roofing Sheets, Per Square.

Gauge.	Painted.	Galvanized.	Gauge.	Painted.	Galvanized.
29	....	$2.30	23	$2.35	$3.45
28	$1.30	2.45	22	2.55	3.65
27	1.45	2.50	21	2.75	4.00
26	1.55	2.60	20	3.00	4.30
25	1.80	3.00	18	4.60	5.65
24	2.05	3.10	16	4.85	6.45

Wire Rods and Wire.—Bessemer, open hearth and chain rods, $26 to $26.50. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days, or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, $1.40; galvanized,

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$1.75. Carload lots, to retailers, annealed, $1.50; galvanized, $1.80. Galvanized bar wire to jobbers, $1.90; painted, $1.60. Wire nails, to jobbers, $1.60.

The following table gives the price to retail merchants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

Fence Wire, Per 100 lb.

Nos.	0 to 9	10	11	12 & 12½	13	14	15	16
Annealed	$1.55	$1.60	$1.65	$1.70	$1.80	$1.90	$2.00	$2.10
Galvanized	1.85	1.90	1.95	2.00	2.10	2.20	2.60	2.75

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 2, 1911:

Butt Weld.

	Steel Black.	Steel Galv.	Iron Black.	Iron Galv.
⅛ and ¼ in.	73	53	68	48
⅜ in.	74	64	69	59
½ in.	77	67	72	62
¾ in. to 1½ in.	80	72	75	67
2 in. to 3 in.	81	74	76	69

Lap Weld.

1¼ and 1½ in.	..	..	68	61
2 in.	77	70	72	65
2½ to 4 in.	79	72	74	67
4½ to 6 in.	78	70	73	65
7 to 12 in.	76	66	71	61
13 to 15 in.	52	..	47	..

Butt Weld, extra strong, plain ends, card weight.

⅛, ¼, ⅜ in.	70	60	65	55
½ in.	75	69	70	64
¾ to 1½ in.	79	73	74	68
2 to 3 in.	80	74	75	69

Lap Weld, extra strong, plain ends, card weight.

1¼ in.	..	..	66	60
2 in.	76	70	71	65
2½ to 4 in.	78	72	73	67
4½ to 6 in.	77	71	72	66
7 to 8 in.	70	60	65	55
9 to 12 in.	65	55	60	50

Butt Weld, double extra strong, plain ends, card weight.

½ in.	65	59	60	54
¾ to 1½ in.	68	62	63	57
2 to 3 in.	70	64	65	59

Lap Weld, double extra strong, plain ends, card weight.

2 in.	66	60	61	55
2¼ to 4 in.	68	62	63	57
4½ to 6 in.	67	61	62	56
7 to 8 in.	60	50	55	45

Plugged and Reamed.

1 to 1½, 2 to 3 in. Butt Weld
2, 2½ to 4 in. Lap Weld

} will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld, as specified.

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.		*Charcoal Iron.*	
1¼ to 2¼ in.	65	1½ in.	48
2½ in.	67½	1¾ to 2¼ in.	50
2¾ to 3¼ in.	72½	2½ in.	55
3½ to 4 in.	75	2¾ to 5 in.	60
5 to 6 in.	67½		
7 to 13 in.	65		

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.
Less than carloads will be sold at the delivered discount for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

Pittsburgh

PITTSBURGH, PA., November 1, 1911.—*(By Telephone.)*

Pig Iron.—A further break in prices of Bessemer iron has taken place and in the past week sales of small lots have been made at $14.25, Valley furnace, and one lot of 200 tons for prompt shipment was sold at $14.10, Valley, or $15, Pittsburgh. Malleable Bessemer has also further declined, sales of about 3000 tons having been made in the past week at $12.50, Valley furnace. There is very little doing in foundry iron, buyers placing orders only for small lots for current needs and showing no disposition to make contracts for next year. We quote: Bessemer, $14.25; malleable Bessemer, $12.50; basic, $12.50; No. 2 foundry, $13.25, and gray forge, $12.75, all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton.

Steel.—Specifications against contracts for billets and sheet bars are fairly active, but new inquiry is dull. There have been some negotiations between the steel mills and the sheet and tin plate mills for sheet and tin plate bars for first quarter, but so far no contracts have been closed. The billet and rail sales department of the Carnegie Steel Company reports that orders sent to the mills for rolling in October exceeded September by 27,000 tons, October having been the largest month in billets and rails the company has had since last March. We note sales of 4000 to 5000 tons of open hearth and Bessemer billets for prompt shipment at about $19 for open hearth and $20 for Bessemer at maker's mill. We quote open hearth billets, $19; Bessemer billets, $20; open hearth sheet bars, $20; Bessemer sheet bars, $21, and forging billets, $24, f.o.b. at maker's mill.

Steel Rails.—The first actual inquiry for steel rails for 1912 delivery has come from the Norfolk & Western Railroad, which is asking for 25,000 tons for the first quarter of next year. Further inquiry from other roads is expected within a short time. The Carnegie Steel Company reports a fairly active market on light rails and is making regular shipments abroad. In some cases light rails for export bring slightly higher prices than domestic business. We quote light rails as follows: 8 and 10-lb. sections, 1.295c.; 12 and 14-lb., 1.205c.; 16, 20 and 25-lb., 1.16c.; 30 and 35-lb., 1.15c.; 40 and 45-lb., 1.105c.

(By Mail.)

A leading official of one of the larger independent steel companies, in referring to the suit to dissolve the United States Steel Corporation, says that "it would be a national calamity" if this should be brought to pass, and it may be stated that this opinion is held by most of the iron and steel companies that are direct competitors of the Steel Corporation. In the 10 years of its existence the treatment of its competitors and its customers by the Steel Corporation has been most considerate. Numerous instances can be recalled when its subsidiaries have furnished badly needed material to competing interests to help them out, even when it could be hardly spared. Three or four years ago, when there was a famine in the supply of billets and sheet bars, the Carnegie Steel Company furnished them to its competitors, although badly needing the steel for its own mills. But a few months ago the American Sheet & Tin Plate Company furnished pig tin to competing tin plate plants that were short of that metal and would have had to have shut down if they had not been helped out. The general opinion here is that the United States Government will not be successful in this suit. For the moment there is no doubt that it has checked business, but this will probably be only temporary. The tendency of prices on nearly all lines is still downward.

Ferromanganese.—Efforts of the importers to obtain $38 and $38.50 for 80 per cent. ferromanganese for delivery in the first half of 1912 have failed, two sales being reported—one of 500 tons and one of 800 tons—for first half of next year at about $37.50, Baltimore. For delivery over the next two or three months $37, Baltimore, has been quoted, the freight rate for delivery in the Pittsburgh district being $1.95 a ton.

Ferrosilicon.—The high prices ruling for 50 per cent. ferrosilicon have checked the demand. The supply of 50 per cent. seems to be pretty well controlled by one or two interests, and the recent heavy advances in prices are being held. We quote 50 per cent. at $62, with some sellers asking as high as $64 to $65, Pittsburgh. We quote 10 per cent., $22; 11 per cent., $23, and 12 per cent., $24, f.o.b. cars Ashland, Ky., or Jackson, Ohio.

Skelp.—A sale of 500 tons of narrow grooved steel skelp is reported at 1.10c., maker's mill, equal to 1.15c., delivered in the Pittsburgh district. We quote grooved steel skelp at 1.15c.; sheared steel skelp, 1.20c.; grooved iron skelp, 1.40c., and sheared iron skelp, 1.60c., all for delivery at consumers' mills in the Pittsburgh district.

Wire Rods.—The local market continues very dull and specifications against contracts are unsatisfactory. Prices are weak and while $26, Pittsburgh, is being quoted on the small lots that are coming out, it could be shaded if any large business was offering.

Plates.—The report that the Grand Trunk Railroad had placed an order with the Pressed Steel Car Company for 2000 steel cars, the plates to be furnished by the Carnegie Steel Company, is untrue. The railroad company is in the market for these cars, but the contract has not been given out. The Baltimore & Ohio has finally inquired for 1000 box cars, 1500 composite gondolas and 1500 steel gondolas. The Union Pacific is still in the market for 65 postal and baggage cars; the Chicago, Rock Island & Pacific for 500 furniture, 250 flat cars and 25 cabooses; the Delaware, Lackawanna & Western for 987 steel underframes; Wessell,

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Duvall & Co., New York, for 200 box cars, 100 gondolas and 100 stock cars to be shipped abroad; the Southern Railway for 500 ventilated box cars, and the Norfolk & Southern for 300 to 500 box cars. The Pressed Steel Car Company has sold to the Pennsylvania Railroad 41 motor passenger and 24 motor passenger and baggage cars for suburban traffic. The Carnegie Steel Company has recently taken contracts for a heavy tonnage of plates from several of the shipbuilding concerns and more actual business is now in sight and is being placed than for some time. We quote wide and narrow plates at 1.15c. on ordinary orders and 1.20c. in small lots, f.o.b. at mill. On a very desirable contract for large tonnage and attractive rolling specifications it is probable that the lower price named might be slightly shaded by one or two mills.

Structural Material.—Considerable work has been placed in the past week and more is in sight. The Cambria Steel Company, Johnstown, Pa., has taken 2500 tons for the Rice Hotel at Houston, Texas, and the Virginia Bridge & Iron Company has taken 1500 tons for the Hurd Hotel at Tampa, Fla. The McClintic-Marshall Construction Company has taken 650 tons for the Michigan Trust Company Building, Grand Rapids, Mich., and 1700 tons for additional buildings for the New York Shipbuilding Company at Camden, N. J. Prices on structural material are ruling fairly strong and we continue to quote beams and channels up to 15 in. at 1.15c. to 1.20c., Pittsburgh, prices depending on desirability of the order.

Sheets.—A fairly heavy volume of new business is being placed with the mills. There seems to be a feeling among the trade that possibly prices of sheets have not touched bottom, and for this reason orders are being placed rather conservatively. It is stated that the demand for electrical sheets is quite heavy, but prices are ruling lower than for some time. Some consumers of sheets are willing to place contracts at present prices for long delivery ahead, but as a rule the mills are not willing to take such orders. Nevertheless, some contracts for black and galvanized sheets involving a good tonnage have been placed with local mills for delivery through the first half of next year. The market is fairly strong and No. 28 gauge, one pass, black annealed sheets are ruling at 1.90c. on small orders and 1.85c. for desirable specifications. No. 28 galvanized sheets continue to rule at 2.85c. to 2.90c. The sheet mills generally are operating to about 60 per cent. of capacity.

Tin Plate.—Several of the leading tin plate makers state that since the price of $3.40 per base box went into effect some excellent contracts have been placed by large consumers, particularly the can makers and salmon packers. So far, however, there has not been general eagerness by consumers to contract ahead, the feeling being that prices will certainly not be any higher in the near future. Shipments to Canada and to foreign countries continue heavy and form quite a good part of the tonnage that is moving from the mills. Operations among the tin plate mills are steadily growing less, as they have not started as yet to run on stock orders. At present they are operating to only 50 to 55 per cent. of capacity. We continue to quote 100-lb. cokes, 14 x 20, at $3.40 per base box, f.o.b. at maker's mill, but some evidences of weakness have recently developed.

Bars.—The new demand for steel bars is only fairly active, but in most cases is for small lots to cover current requirements of consumers. The opinion is growing that prices on steel bars have probably touched bottom and for this reason a slight increase in specifications against contracts is noted. The demand for iron bars is quiet. We quote steel bars at 1.10c. for desirable orders and 1.15c. in small lots. Iron bars are ruling at 1.20c. to 1.25c., maker's mill, depending on the order, freight added to point of delivery.

Merchant Steel.—New orders are still confined to small lots to meet actual needs. Specifications against contracts are quiet. Shipments by the mills in October will show a falling off as compared with September. Quotations, which are more or less shaded, are as follows: Iron finished tire, ¼ and ½ in. and heavier, 1.40c.; under these sizes, 1.45c.; planished tire, 1.50c.; channel tire, 1.70c., base; toe calk, 1.80c.; flat sleigh shoe, 1.45c.; concave or convex, 1.60c.; cutter shoe, tapered or bent, 2.15c.; spring steel, 1.85c.; machinery steel, smooth finish, 1.75c.

Hoops and Bands.—The demand is very dull and specifications against contracts are also unsatisfactory. We quote steel hoops at 1.35c. and bands at 1.15c., extras on the latter as per the steel bar card, but on very desirable orders for shipment at the convenience of the mill these prices would be shaded by some mills, although not over $1 a ton.

Rivets.—Both structural and boiler rivets are in slightly better demand. We quote structural rivets at 1.50c. and boiler rivets at 1.60c., f.o.b. Pittsburgh. On a desirable contract for prompt shipment these prices might be shaded

Wire Products.—The reduction of $1 a ton in wire products has not stimulated the demand, which continues only for small lots. Specifications against contracts are unsatisfactory and in some cases have been held up entirely. We quote wire nails at $1.60; cut nails $1.50; galvanized barb wire $1.90; painted $1.60; annealed fence wire $1.40 and galvanized fence wire $1.70; all f.o.b. Pittsburgh, usual terms, full freight added to point of delivery. To some points of shipment, notably in the South, delivered prices on wire products are being made in competition with Ohio River mills that are less than the Pittsburgh price plus the freight rate.

Spelter.—The market is very strong and we quote prime Western at 6.20c., East St. Louis, equal to 6.32½c., Pittsburgh.

Shafting.—New orders are light and only for small lots, while specifications from consumers, notably the automobile builders and the implement makers, are very unsatisfactory. Consumers seem to be taking in as little material as possible. We quote cold rolled steel shafting at 60 and 5 per cent. off in small lots and 60 and 10 per cent. off the list in carload and larger lots, delivered in base territory. On a desirable specification, for prompt shipment, this price might be shaded.

Railroad Spikes.—New orders are only for small lots to cover track repair work. We quote railroad spikes in base sizes at $1.40, f.o.b. Pittsburgh.

Merchant Pipe.—Some small orders for gas and oil lines are being placed and while some large projects requiring line pipe are under way it is not likely that much will be done with these this year, as the season is too late. The Youngstown Sheet & Tube Company, Youngstown, Ohio, has received an order from the Isthmian Canal Commission for 20,000 ft. of 2 to 10-in. pipe. The High Grade Oil Company, Butler, Pa., has placed an order with a local mill for about 20 miles of 3-in. and 16 to 18 miles of 2-in. steel line pipe. One local mill reports that its orders for tubular goods in October showed a slight increase over September. The general demand for merchant pipe has held up better so far this year than usual, and, as a rule, the leading pipe mills are operating to from 65 to 70 per cent. of capacity. It is stated that the new discounts on iron and steel pipe are being fairly well held.

Iron and Steel Scrap.—An item of interest in the scrap trade is that the Jones & Laughlin Steel Company has come in the market in the past week or 10 days as a buyer of heavy steel scrap, and local dealers report sales of 8000 to 10,000 tons of special grade and at as high as $12.60 delivered to its works on the South Side in this city. This buying has given a slightly stronger tone to the local market on heavy steel scrap. Other consumers are taking in more material than for some time, but in a general way prices on the other grades do not show any signs of betterment. Dealers are quoting as follows, per gross ton, f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$12.00
No. 1 foundry cast	$12.50 to 12.75
No. 2 foundry cast	11.75 to 12.00
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district	10.25 to 10.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	12.50 to 12.75
No. 1 railroad malleable stock	11.50 to 11.75
Grate bars	9.00 to 9.25
Low phosphorus melting stock	15.00 to 15.25
Iron car axles	20.50 to 21.00
Steel car axles	16.00 to 16.25
Locomotive axles	22.00 to 22.50
No. 1 busheling scrap	11.00 to 11.25
No. 2 busheling scrap	7.00 to 7.25
Old car wheels	12.00 to 12.25
*Cast iron borings	8.00 to 8.15
*Machine shop turnings	8.75
†Sheet bar crop ends	13.75 to 14.00
Old iron rails	14.50 to 14.75
No. 1 wrought scrap	12.00 to 12.25
Heavy steel axle turnings	9.75 to 10.00
Stove plate	9.00 to 9.25

*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping point.

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Boiler Tubes.—More new orders for boiler tubes for locomotives are being placed than for some time. Local interests have taken an order for boiler tubes for 100 locomotives to be built by the Canadian Pacific Railroad. The new demand for merchant tubes is very dull. Prices on both locomotive and merchant tubes are more or less shaded.

Coke.—A local interest reports sales of about 12,000 tons of standard furnace coke for November shipment at $1.60 per net ton at oven. Prices on both furnace and foundry coke are firmer than for some time. Several inquiries from blast furnace owners for coke for the first half of next year are in the market, but these are very slow in being closed up. The output of coke in the Upper and Lower Connellsville regions last week showed an increase over the previous week of about 5000 tons. We quote standard makes of furnace coke for prompt shipment at $1.50 to $1.55 and for the remainder of the year $1.55 to $1.60 per net ton at oven; foundry coke, 72-hr., prompt, $1.85 to $2, and contract, $2.10 to $2.40.

The Ohio Iron & Metal Company, of Cleveland, dealer in iron and steel scrap, is discontinuing its branch office in the Farmers' Bank Building, Pittsburgh, in charge of H. D. Stalnaker, and is also discontinuing its Philadelphia and Chicago offices.

Chicago

CHICAGO, ILL., October 31, 1911.

A general survey of the market indicates that recent events have increased the conservatism of buying interests, and where the prevailing low prices were beginning to appear interesting to them the prospect of a prolonged period of low values has now been reaffirmed. Mill bookings are expected, therefore, to represent only the current requirements of purchasers for some time to come. During the past week plate specifications have shown some increase, followed in lesser degree by steel bars and structural shapes. Sheet tonnage has fallen off somewhat and mills are operating on a lower schedule of activity. A general reluctance to place orders prevails in all directions and the pig iron market in particular reflects this condition. Prices for old material continue weak and there are those who predict still lower values.

Pig Iron.—The market during the past week shows practically no change. A little more iron for delivery in the first quarter has been placed in scatttered lots of small quantity. No inquiries of unusual importance are noted and the buying even in the lots of a few hundred tons fluctuates widely in volume from day to day. For local Northern iron the asking price of furnaces remains at $14.50, f.o.b. furnace. Southern No. 2 iron continues on the basis of $10, Birmingham. In some instances analysis distinctions are not so sharply drawn as during a period of stronger prices. We quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices on prompt shipments:

Lake Superior charcoal	$16.50 to $17.00
Northern coke foundry, No. 1	14.75 to 15.00
Northern coke foundry, No. 2	14.35 to 14.50
Northern coke foundry, No. 3	14.00 to 14.35
Northern Scotch, No. 1	16.00
Southern coke, No. 1 foundry and No. 1 soft	14.85 to 15.10
Southern coke, No. 2 foundry and No. 2 soft	14.35 to 14.85
Southern coke, No. 3	14.10 to 14.35
Southern coke, No. 4	13.85 to 14.10
Southern gray forge	13.60 to 13.85
Southern mottled	13.60 to 13.85
Malleable Bessemer	14.35 to 14.50
Standard Bessemer	17.00
Basic	14.75
Jackson Co. and Kentucky silvery, 6 per cent	16.40
Jackson Co. and Kentucky silvery, 8 per cent	17.40
Jackson Co. and Kentucky silvery, 10 per cent	18.40

Rails and Track Supplies.—The situation from the standpoint of railroad buying holds little of interest to report. In practically every direction railroad equipment purchases are at a minimum, although mills are now engaged with the tonnage furnished by recent car purchases. Track fastenings are moving with a little less activity and prices are increasingly favorable to buyers. We quote standard railroad spikes at 1.60c., base; track bolts with square nuts, 2c. to 2.10c., base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12 lb., 1.25c. to 1.30½c.; angle bars, 1.50c., Chicago.

Structural Material.—The award of the Field Museum tonnage, recently reported as 10,000 tons, has been revised and the contract placed with the Hansell-Elcock Company, Chicago, calls for 6929 tons. The Vierling Steel Company, Chicago, will fabricate 2500 tons for the Otis Elevator Company warehouse in this city. Steel for an addition to the Michigan Trust Building, Grand Rapids, Mich., amounting to 650 tons, will be furnished by the McClintic-Marshall Company. There is less activity in seeking structural tonnage regardless of price in this market, and to this extent a firmer condition obtains. We quote for plain shapes, mill shipment, at Chicago, 1.33c. to 1.38c., and from store, 1.65c.

Plates.—Conditions during the past week have offered some little encouragement by reason of increased specifications, but from the standpoint of prices little improvement can be noted. In the West the mill situation as regards tonnage on the books is quite satisfactory and a continuance of the current volume will probably require additional capacity in operation in order to maintain present prompt deliveries. We quote for Chicago delivery, mill shipment, 1.33c. to 1.38c., and from store, 1.65c.

Sheets.—Where some of the Western mills were operating at close to 100 per cent. recently, their schedules are now cut down to about 80 per cent. Buyers seem inclined to hold back requisitions as long as possible and specifications are cut to minimum requirements. Where desirable business is involved concessions of $1 a ton from regular quotations are necessary to obtain the business not infrequently. We quote Chicago prices as follows: Carload lots, from mill, No. 28 black sheets, 2.08c.; No. 28 galvanized, 3.08c.; No. 10 blue annealed, 1.58c. Prices from store, Chicago, are: No. 10, 1.90c. to 2c.; No. 12, 1.95c. to 2.05c.; No. 28 black, 2.30c.; No. 28 galvanized, 3.35c.

Bars.—The market for both iron and steel bars offers little consolation to the mills. There is little doubt that bar iron prices are nearer the cost of production than they have been in many years. Quotations above 1.17½c., Chicago, would fail of taking any of the few orders current. Steel bar prices continue close to the basis of 1.10c., Pittsburgh. We quote as follows, f.o.b. Chicago: Soft steel bars, 1.25c. to 1.33c.; bar iron, 1.15c. to 1.20c.; hard steel bars rolled from old rails, 1.17½c. to 1.20c. From store, soft steel bars, 1.55c. to 1.60c., Chicago.

Old Material.—The shrinkage in value of old material continues, though it is less decided than in some previous weeks. Conditions are such that from every standpoint, consumers' as well as dealers', it is desirable to hold a minimum stock. Evidences seem to indicate that with possibly one exception there are no large accumulations of scrap in this territory. Speculation has been unprofitable for so long a period that it is now entirely absent in this market and liquidation has been carried to a noteworthy extent. The only offering from railroads selling in this market is about 1400 tons by the Northern Pacific. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, per gross ton, as follows:

Old iron rails	$14.50 to $15.00
Old steel rails, rerolling	12.00 to 12.50
Old steel rails, less than 3 ft.	10.75 to 11.25
Relaying rails, standard section, subject to inspection	24.00
Old car wheels	12.00 to 12.50
Heavy melting steel scrap	9.50 to 10.00
Frogs, switches and guards, cut apart	9.75 to 10.25
Shoveling steel	9.00 to 9.50
Steel axle turnings	8.25 to 8.75

The following quotations are per net ton:

Iron angles and splice bars	$11.75 to $12.25
Iron arch bars and transoms	13.00 to 13.50
Steel angle bars	8.75 to 9.25
Iron car axles	16.75 to 17.25
Steel car axles	15.25 to 15.75
No. 1 railroad wrought	10.00 to 10.50
No. 2 railroad wrought	9.00 to 9.50
Steel knuckles and couplers	9.25 to 9.75
Steel springs	9.75 to 10.25
Locomotive tires, smooth	13.50 to 14.00
Machine shop turnings	5.75 to 6.25
Cast and mixed borings	5.00 to 5.50
No. 1 busheling	8.00 to 8.50
No. 2 busheling	5.75 to 6.25
No. 1 boilers, cut to sheets and rings	6.75 to 7.25
Boiler punchings	12.00 to 12.50
No. 1 cast scrap	10.00 to 10.50
Stove plate and light cast scrap	8.50 to 9.00
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.50 to 9.00
Pipes and flues	7.00 to 7.50

Wire Products.—The necessities of wire mills as regards tonnage continue to bring out lower prices than are regularly quoted. Those departments furnishing what is the raw material of certain other

THE IRON AND METAL MARKETS

makers of wire products have particularly felt the restricted volume of buying. The wire nail trade continues short of expectations, while the demand for fencing holds up fairly well. Jobbers' carload prices, which are also quoted to manufacturing buyers, are as follows, per 100 lb.: Plain wire, No. 9 and coarser, base, $1.58 to $1.63; wire nails, $1.78 to $1.83; painted barb wire, $1.78 to $1.83; galvanized, $2.08 to $2.13; polished staples, $1.78 to $1.83; galvanized, $2.08 to $2.13, all Chicago.

Cast Iron Pipe.—The cast iron pipe business is very light and municipal lettings of importance are entirely lacking. At Muskegon, Mich., bids have been rejected and a new letting advertised for November 6. We quote as follows, per net ton, Chicago: Water pipe, 4-in., $26.50; 6 to 12-in., $24.50; 16-in. and up, $24, with $1 extra for gas pipe.

Philadelphia

PHILADELPHIA, PA., October 31, 1911.

The trade has a tendency to pause, while endeavoring to get some light on the effect of the suit by the government against the Steel Corporation. At this time there is little available to base opinions, but a feeling is apparent that little beyond a temporary hesitancy in business will be noted. Transactions in practically all lines of crude and finished products show little betterment. Concessions are still being made in competition for desirable orders. The demand for pig iron continues along narrow lines; in one or two instances slight concessions on foundry grades are reported, but have so far not affected general quotations. The old material market is quiet. Coke continues dull.

Iron Ore.—Nothing in the way of new business in foreign ore has developed. The reduced freight charges on Lake ores will not, it is believed, directly affect the ore market in the East at this time, although consumers will probaby endeavor to get prices on other ores reduced on the same basis. Importations during the week include 13,850 tons of Cuban, 12,275 tons of Newfoundland, 5033 tons of Swedish and 4900 tons of Grecian ore.

Pig Iron.—Transactions have been comparatively light, although somewhat better buying is reported on the part of nearby consumers. A shade of weakness in prices for foundry grades is noticeable in one or two directions, but these have not been such as to affect the general range of quotations, the concessions reported not being over 10 cents below the usual quotations for standard analysis brands. Prompt iron is comparatively scarce in this district and producers are not anxious to load up their order books at the present range of prices for any extended shipment. The bulk of the sales for foundry grades have been in small lots for either prompt or near future shipment, at from $15 to $15.25, delivered, although, as previously stated, $14.90 has been done in a few instances. Occasionally an odd lot of No. 2 X is sold at $15.35 and even $15.50. Sales of No. 2 plain iron are reported at both $14.75 and $15. There is probably a little better inquiry for the higher grades of foundry iron. One New Jersey interest is in the market for 1000 tons for delivery over the next three months, while several local consumers have inquiries out for 500-ton lots. Several inquiries for moderate quantities for strictly first quarter delivery are also reported. The cast iron pipe foundries are still negotiating for several round lots of low grade iron, principally Southern brands. Some small buying by the same interests in which Northern low grade iron has been taken is also reported. The most important transaction in Virginia foundry iron was the sale of a lot of 1500 tons to a New Jersey stove interest for delivery in the next three months at $12.50 at furnace. Small and moderate lot sales of Virginia foundry at prices ranging from $12.25 for prompt to $12.50 for near future delivery are also reported. Several sales of small lots of low grade iron to cast iron pipe makers in that territory have also been made. A better movement in rolling mill forge iron has developed; several 500-ton lots of Northern forge have been sold for early shipment at prices varying from $14.25 to $14.50, delivered. One inquiry for 1500 tons of this grade, which was before the trade last week, is understood to have been withdrawn. A purchase of 1000 tons of basic by a central Pennsylvania melter has been reported, but contemplated further purchases by the same interest have been held up. The purchase of a block of 5000 tons of basic for early 1912 shipment, which has been before the trade for several weeks, has not yet been consummated. No business of importance in low phosphorus iron is reported, small lots selling at the market. The following range of prices is named for standard brands, deliveries in buyers' yards in this district during the next 60 days and into or through the first quarter of next year:

Eastern Pennsylvania No. 2 X foundry	$15.00 to $15.25
Eastern Pennsylvania No. 2 plain	14.75 to 15.00
Virginia foundry	15.00 to 15.50
Gray forge	14.25 to 14.50
Basic	14.50
Standard low phosphorus	20.00

Ferroalloys.—An inquiry for some 300 tons of 80 per cent. ferromanganese, for next year's delivery, is before the trade, on which prices appear to be firm at $38.50, Baltimore. While no business in prompt lots has developed, little doubt is expressed that lower quotations would be available on speculative material. Fifty per cent. ferrosilicon is firm at $62, delivered, while furnace ferrosilicon, within Bessemer limits as to sulphur and phosphorus, is quoted at $27.30 to $28.30, delivered here. No business in either grade is reported.

Billets.—While the bulk of the business is still confined to small lots, the trade is more encouraged with the situation, as some of the larger consumers are showing more interest in the market. Producers claim that at $21.40, delivered here, rock bottom has been reached for open-hearth rolling billets and that that price now applies only on desirable orders, $22.40 being named for ordinary small lots. Forging billets are quoted at $26.50 to $27.50, according to specifications, delivered in this district.

Plates.—Few large contracts have come out, although one order for several thousand tons of boat plates is said to have been placed during the week. A fair demand for marine boiler and tank steel is noted, quantities in instances running into several hundred tons. Open quotations for ordinary steel plates, delivered in this district, range from 1.35c. to 1.40c., and while it is said that 1.30c. could be done for desirable business, nothing is reported to have developed recently on which the lower basis has been named.

Structural Material.—A large number of good propositions are pending, but close slowly. The structural material for the Municipal Convention Hall has not, it is said, been definitely placed. That for the Baldwin Locomotive Works erecting shop addition is still held up, while the material for the Royster Building in Norfolk, 1600 tons, will require re-estimating. The New York Shipbuilding Company has placed the order for the addition to its plant, about 1700 tons. Several good propositions are in sight, including the new Stock Exchange Building and the new Manufacturers' Club in this city. Several large apartment houses in Baltimore, Md., and in this city are also being figured on. There have been several small buildings placed, requiring a few hundred tons of material each, also some small bridge orders. Prices of plain material are pretty generally on a 1.35c. to 1.40c., delivered here, basis, although on desirable orders 1.30c. can be done. For fabricated work prices continue extremely low.

Sheets.—Makers in this district report a better run of general orders, with a tendency on the part of consumers to take care of their needs up to the end of the year. Order books are therefore in better shape and Eastern mills have been able to operate on a better basis. No further price weakness appears to have developed and No. 28 gauge, Western one pass sheets command 2.05c., delivered here, while Eastern three pass sheets command a materially higher price.

Bars.—The demand has not been active, and the present price level of either iron or steel bars has not been seriously tested. Small orders continue to be placed at recent quotations,—1.20c. for desirable orders, and up to 1.25c., delivered, for the ordinary run of business in iron bars, and 1.25c. as an open quotation for steel bars. The latter are, however, not particularly strong at that basis.

Coke.—New business has been rather quiet, although sellers report heavy shipments on contracts. Transactions are closely confined to small lots in both foundry and furnace grades, mostly for prompt delivery. Prices are practically unchanged, the following range, per net ton, delivered in buyers' yards in this district, about representing the market:

Connellsville furnace coke	$3.65 to $4.05
Foundry coke	4.15 to 4.50
Mountain furnace coke	3.40 to 3.65
Foundry coke	3.95 to 4.40

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Old **Material.**—Quiet conditions continue to prevail in practically all grades. Consumers continue to take on odd lots, largely of the bargain counter class, but there is still an absence of any pronounced buying. Moderate lot sales of heavy melting steel are moving at prices ranging from $11.75 to $12, delivered. The lot of approximately 610 tons of Panama scrap, offered last week, was awarded to the Alan Wood Iron & Steel Company at its bid of $10.05, on cars here. A cargo of about 1100 tons of Cuban scrap, mixed grades, was received at this port during the week, the various classes of material being applied on contracts held by the seller. Rolling mill grades of scrap are not in very active demand, transactions being confined to small lots, both buyers and sellers awaiting further developments. Prices of leading grades show but little change, the following range about representing quotations at which the ordinary current business for prompt shipment can be done, delivery in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to $1.35 per gross ton, for shipment ranging from prompt to the remainder of the year:

No. 1 heavy melting steel scrap	$11.75 to $12.25
Old steel rails, rerolling (nominal)	12.75 to 13.25
Low phosphorus heavy melting steel scrap	15.75 to 16.25
Old steel axles (nominal)	18.00 to 18.50
Old iron axles (nominal)	22.50 to 23.50
Old iron rails (nominal)	15.50 to 16.00
Old car wheels	11.50 to 11.75
No. 1 railroad wrought	13.75 to 14.25
Wrought iron pipe	11.25 to 11.75
No. 1 forge fire	9.50 to 10.00
No. 2 light iron (nominal)	6.00 to 6.50
Wrought turnings	8.00 to 8.25
Cast borings	7.50 to 7.75
Machinery cast	12.25 to 12.75
Railroad malleable (nominal)	11.00 to 11.50
Grate bars, railroad	9.25 to 9.75
Stove plate	9.25 to 9.75

Cleveland

CLEVELAND, OHIO, October 31, 1911.

Iron **Ore.**—The reduction of rail freight rates from 80c. to 60c. a ton on ore from the Mesaba range to Duluth and the reduction from 90c. and $1 from points on the Vermillion range have added to the uncertainty regarding ore prices for next season. While furnacemen look for a reduction in ore prices from the two ranges that will at least be equivalent to the reduction in freight rates there seems to be little probability that ore firms will take any action on the matter of readjusting prices for some time. Ore sellers are inclined to do nothing regarding 1912 prices until consumers are ready to buy for their next year's requirements so that they can be guided by conditions that then exist in the iron and steel trade. Present conditions do not indicate an early buying movement. It may be well along toward spring before consumers come into the market for their ore. Over two-thirds of the Lake Superior ore comes from the two ranges that will have the lower freight rates. Of the total shipments during 1910 slightly over 67 per cent. came from the Mesaba range, on which the freight rate has been reduced 20c., and 2.8 per cent. came from the Vermillion range. We quote prices as follows: Old range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

Pig **Iron.**—New low prices on foundry iron have been made, sales being reported at prices less than equivalent to $13, Valley furnace, for No. 2. We note the sale of about 1500 tons of No. 2 foundry for delivery the remainder of the year and through the first quarter at $12.65, Cleveland furnace, for shipment to Columbus with a freight rate of $1.20. Another central Ohio manufacturer who had an inquiry out for 1000 tons for the first half has bought at $13 or less at furnace for No. 2. One interest made a quotation of $13, Valley furnace, on each of these inquiries but failed to get either order. We also note the sale of 1000 tons of No. 2 foundry to a Cleveland foundry for November and December delivery. The nominal Cleveland quotation of No. 2 foundry has been reduced to $13 at furnace, for both local delivery and for outside shipment, and for delivery extending through the first quarter. Valley furnaces generally do not appear to be meeting the competition, mostly holding at $13.25 for No. 2 foundry. A few small lot sales are reported and some inquiries for small lots are coming out, the largest being three for 500 tons each. Few consumers want to buy for delivery after the first of the year and the possibility of lower ore prices as a result of the reduction in freight rates is expected to cause more hesitancy on the part of buyers, who feel that lower ore prices would result in a further reduction in pig iron prices. There is no inquiry of any size for Bessemer or basic iron. The nominal price of $14.50 on Bessemer does not appear to be firmly maintained. Some sales of Southern iron in lots of 100 to 300 tons are reported. In spite of the limited demand for pig iron, shipments on contracts continue very good, having shown considerable improvement during the past three months and some stocks have been largely reduced. For Cleveland delivery we quote as follows, delivered, for the last and first quarters:

Bessemer	$15.40
Basic	13.40
Northern foundry, No. 2	13.25
Gray forge	13.00
Southern foundry, No. 2	$14.35 to 14.65
Jackson County silvery, 8 per cent. silicon	17.05

Coke.—The furnace coke market is quiet. The demand for foundry grades shows an improvement. Some small contracts have been closed for delivery the remainder of the year. We quote standard Connellsville furnace coke at $1.50 to $1.55 per net ton at oven for prompt shipment, and $1.55 to $1.60 for the remainder of the year. Connellsville 72-hr. foundry coke is held at $1.85 to $2.15 for prompt shipment and $2.10 to $2.40 for contract.

Finished Iron and Steel.—Mills are getting a fair volume of orders but they are almost entirely for small tonnages. Consumers are buying almost entirely for immediate requirements. Some agencies report an improvement in specifications on contracts. A good volume of specifications is coming from the implement makers. The price situation shows very little change, prices on most lines being unsettled. While 1.10c., Pittsburgh, is generally the minimum quotation on steel bars the market is disturbed by continued reports that steel bars can be bought at 1.05c., and it appears probable that some business is being taken at the latter price. Prices on plates range from 1.15c. to 1.20c. Structural material is firmer than other lines but concessions of 50c. a ton from the regular 1.20c. price are reported. The demand for sheets is fairly active. The sheet market is firm at the minimum quotations of 1.85c. for No. 28 black and 2.85c. for No. 28 galvanized, these prices being for car lots. Low prices of soft steel bars have forced makers of rerolled steel bars to reduce their quotation on hard steel bars in some cases to 1.08c. Lower prices are being quoted on rivets and the demand for boiler rivets is fairly good. We quote structural rivets at 1.50c. to 1.55c., Pittsburgh, and boiler rivets at 1.60c. The demand for structural material is not active. The only new inquiries are for small lots, mostly of 100 tons and under. The demand for iron bars is light. The price is firm at 1.20c., Cleveland mill.

Old Material.—The market is very dull. Prices continue weak but the absence of transactions in several grades makes quotations on some of these grades largely nominal. A local consumer reports the purchase of 1000 tons of heavy steel scrap for the first quarter delivery at $11. Local dealers have advanced their quotations on heavy steel scrap to a minimum of $11. Youngstown and Sharon mills are understood to be willing to pay $12 for this grade, the freight rate from Cleveland being $1 a ton. Yard dealers do not want to buy at present and are not offering stocks at current prices. The Wheeling & Lake Erie and the Big Four Railroads received bids October 30 on small tonnages. The Pennsylvania Lines, West, have a list out to be closed to-day. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails, rerolling	$12.25 to $12.75
Old iron rails	14.00 to 14.50
Steel car axles	17.00 to 17.50
Heavy melting steel	11.00 to 11.25
Old car wheels	11.25 to 11.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	10.50 to 11.00
Railroad malleable	11.00 to 11.25
Light bundled sheet scrap	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$18.50 to $19.00
Cast borings	6.00 to 6.25
Iron and steel turnings and drillings	6.50 to 6.75
Steel axle turnings	7.25 to 7.75
No. 1 busheling	9.00 to 9.50
No. 1 railroad wrought	11.00 to 11.25
No. 1 cast	11.00 to 11.50
Stove plate	9.00 to 9.25
Bundled tin scrap	11.00 to 11.50

THE IRON AND METAL MARKETS

Birmingham

BIRMINGHAM, ALA., October 30, 1911.

Pig Iron.—The action of the United States Government in filing suit for the dissolution of the United States Steel Corporation has had a tendency to shut off buying. Thus far, however, no concessions seem to have been made in prices, and it is thought that they can hardly go any lower than those now ruling; at the same time no buying movement of any consequence is expected soon and the furnace interests seem to be content to let the market take its course and simply to take care of the business that comes along from day to day. Foundries continue to order out iron due on their contracts at a very satisfactory rate and predictions are made that stocks will show still another reduction for the month. There have been a few lots of 100 to 500 tons sold during the week and the price, pretty generally, has been $10 at furnace for No. 2. Quotations remain as follows, per ton of 2240 lbs., f.o.b. cars Birmingham furnaces:

No. 1 foundry and No. 1 soft	$10.50
No. 2 foundry and No. 2 soft	10.00
No. 3 foundry	9.50
No. 4 foundry	9.25
Gray forge	9.00

Cast Iron Pipe.—Some good inquiries are pending before the local producers and special interest is being given to the inquiry of the United States Government on requirements for Colon. It is thought that the Alabama producers will get this order for the Canal Zone, which approximates 5000 tons of 20-in. water main. A good many of the small municipalities of the country are adding water works systems and extending water mains, taking advantage of the low prices ruling on cast iron water pipe. This is helping producers here to continue operations and it is confidently expected that they will be able to run at a fairly satisfactory rate without any material change in prices for some months. Quotations per net ton, f.o.b. cars at foundries in this district, remain approximately as follows: 4-in. to 6-in., $23; 8-in., to 12-in., $22; over 12-in., average, $21, with gas pipe taking its usual differential of $1 a ton higher.

Coke.—Some additional interest is being manifested in the coke market. Prices, however, remain low, practically on a $3 schedule for 72-hr. foundry hand-picked coke f.o.b. ovens here. The expected blowing in of one additional furnace stack in this district has tended to make a little better demand for furnace coke, though the price of that grade still remains very low.

Old Material.—Dealers report some small sales, but not enough to have any material effect on the scrap iron market. The railroads do not seem inclined to turn loose any tonnages to the dealers at any concession in price, and, therefore, little of interest is transpiring. Dealers continue to quote f.o.b. their yards. Birmingham, per gross ton, approximately as follows:

Old iron axles (light)	$12.50 to $13.00
Old steel axles (light)	11.50 to 12.00
Old iron rails	11.50 to 12.00
No. 1 railroad wrought	10.00 to 10.50
No. 2 railroad wrought	8.50 to 9.00
No. 1 country wrought	6.50 to 7.00
No. 2 country wrought	6.00 to 6.50
No. 1 machinery, cast	8.50 to 9.00
No. 1 steel	8.00 to 8.50
Tram car wheels	7.50 to 8.00
Standard car wheels	9.00 to 9.50
Light cast and stove plates	6.00 to 6.50

It is reported that the Southern Iron & Steel Company will blow in, between November 1 and 15, its furnace at Alabama City, Ala., which has been idle for some months. The output will be basic iron, for the consumption of the company at its own steel and wire plant at Alabama City.

St. Louis

ST. LOUIS, MO., October 30, 1911.

The market continues in the same condition which has obtained for the past several weeks, with the buyers keeping out of the market in all lines—pig iron, coke, finished material and scrap—except for immediate consumption on specific requirements. Prices, while low, do not show any sign of demoralization.

Pig Iron.—There are some signs of buying for the first half of next year, but they are not large. The purchases of No. 2 Birmingham during the week will aggregate little more than 2000 tons, all in small lots. There is an inquiry in the market for 500 tons of No. 2 Southern and for 1000 tons of car wheel iron. The price remains around $10 for No. 2, Birmingham basis. The Southern furnaces have begun some agitation here with their customers for a reduction of the freight rate, which is $3.75 from Birmingham here, but there has been, as yet, no concerted action on the part of the buyers in support of the furnaces. It is urged that the rate for an indestructible and easily transported article of commerce is out of proportion with rates on other merchandise. There are assertions of sales of No. 2 Southern pig as low as $9.50, but these are not quotations and are probably arrived at by the analysis route.

Coke.—There are no signs of special activity in coke, that market being affected by the conditions in pig iron, which is moving so slowly as to leave little need for the fuel. The prices still stand at about $1.50 for 48-hr. coke; $1.90 to $2.15 for 72-hr. prompt shipment and $2.10 to $2.35 for delivery over the coming year.

Finished Steel.—In the finished product there is a pretty fair tonnage moving, running up a good aggregate for the month, all things considered. The orders continue reasonably good, although at even the present low prices of steel there are no concerns anxious to place orders for stock. The present understanding is that the Barr building, which will require about 10,000 tons, will be held up for some time to await a better feeling for the final financing. In plates there is practically nothing doing. The quotations stand at about 1.20c., Pittsburgh, for structural, 1.10c. for bars, 1.20c. for plates, with perhaps 1.15c. in special circumstances. Standard rails show no movement, the buying year being about closed for this territory. Light rails are showing fair orders from the coal companies, but nothing from the lumber roads. Track fastenings continue in fair demand.

Old Material.—A list from the Missouri Pacific during the week showed the effect of the new management's work in laying new rails, for 1100 tons of old rails were displaced by the new material, and this line of old material is expected to increase right along now. The plant of the Harry Benjamin Equipment Company, formerly owned by the Block-Pollak Company, has been put in shape and started up this week. The situation generally is one of waiting for something to turn up, for the man who does the least business now loses the least money. Dealers' prices per gross ton, f.o.b., St. Louis, are as follows:

Old iron rails	$12.00 to $12.50
Old steel rails, rerolling	11.50 to 12.00
Old steel rails, less than 3 ft.	10.00 to 10.50
Relaying rails, standard section, subject to inspection	22.50 to 23.00
Old car wheels	11.50 to 12.00
Heavy melting steel scrap	10.00 to 10.50
Frogs, switches and guards cut apart	10.00 to 10.50

The following prices are per net ton:

Iron fish plates	$10.00 to $10.50
Iron car axles	17.00 to 17.50
Steel car axles	15.00 to 15.50
No. 1 railroad wrought	10.25 to 10.75
No. 2 railroad wrought	9.25 to 9.75
Railroad springs	9.25 to 9.75
Locomotive tires, smooth	13.00 to 13.50
No. 1 dealers' forge	7.00 to 7.50
Mixed borings	5.00 to 5.50
No. 1 busheling	8.50 to 9.00
No. 1 boilers cut to sheets and rings	7.00 to 7.50
No. 1 cast scrap	8.50 to 9.00
Stove plate and light cast scrap	7.00 to 7.50
Railroad malleable	7.50 to 8.00
Agricultural malleable	6.50 to 7.00
Pipes and flues	7.50 to 8.00
Railroad sheet and tank scrap	7.00 to 7.50
Railroad grate bars	6.50 to 7.00
Machine shop turnings	6.50 to 7.00

San Francisco

SAN FRANCISCO, CAL., October 24, 1911.

Notwithstanding the prevailing belief that prices have reached about the lowest possible level, our merchants and consumers of steel products are still limiting their purchases pretty closely to current needs, and the agents of manufacturers have no hope of any general revival before the first of the year. Small orders are coming out a little more freely, especially from jobbers at inferior distributing points, where general conditions are extremely favorable. Local merchants are watching the market closely, and are expected to place liberal orders at the first indication of firmness in the East. There are, however, several deterrent factors, including the proximity of the inventory season and the possibility of a reduction in

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the tariff. There is also a tendency to hold off until the local stock to be carried by the United States Steel Products Company is complete and its policy is definitely established.

Bars.—Orders have been placed this month for a very fair tonnage of reinforcing bars, though most individual purchases are small. Conditions are favorable for a heavy movement in this line next year, but the present tendency is to hold stocks down as low as possible. Orders for soft steel bars are mostly of a sorting-up nature, though the distributive market is in a little better condition, and some increase is noted in the aggregate tonnage. A number of local merchants are getting in some foreign material from time to time, but the amount is not very great, and new orders placed with foreign manufacturers are comparatively light. Local resale prices are fairly well maintained at the former quotations of 2c. for steel and 1.90c. for iron.

Structural Material.—Both contracts and new inquiries are still subject to more or less delay, and recent fabricating orders are limited to a few comparatively unimportant jobs. The Westinghouse warehouse, requiring only about 80 tons, was taken by the McClintic-Marshall Construction Company, which also has the contract for the Union Iron Works shop building, a little over 400 tons. A contract will be closed in a few days for a local warehouse, requiring about 150 tons. The Failing building contract, Portland, Ore., has gone to the Northwestern Steel Company, and the Oregon Journal building, in the same city, is up for figures. No inquiry has been received on the Standard Oil building, though the foundation contract has been let, and plans for the superstructure will be finished very soon. The Los Angeles Times contract has not yet been closed, but will probably be let to a local fabricator. The project of another bridge over the Willamette has been taken up again at Portland, Ore., the estimated cost being about $800,000. The Pacific Construction Company has taken a contract for steel jail cells at Fresno, Cal.

Rails.—The movement of both standard and grooved rails is better than for some months. The principal feature in the market is an active and increasing inquiry from interurban traction companies operating in the northern and central part of the State. Some rails are being sold to new lines, which are likely to be in the market on a still larger scale next year, though the largest are from well-established roads. The Northern Electric will place an order for a large tonnage within a few days, and an order has been placed for an extension of the Monterey, Cal., street railroad. The Central California Traction Company is preparing to extend its line from Lodi to Lockeford, Cal. Plans are being made for a new line from Sacramento to Woodland, Cal. The town of Santa Barbara, Cal., has taken bids on a lot of 25-lb. rails, but the general demand for such material is very light, with few orders of any consequence.

Sheets.—A slight improvement is noted in a jobbing way, but the consuming trades are not inclined to acquire any surplus over present requirements. Merchants are buying only what is necessary, and are expected to hold their stocks down to a minimum until after the first of the year. Resale prices continue weak and unsettled.

Plates.—Tank manufacturers are fairly busy, and small orders are coming out in better shape than earlier in the month.

Merchant Pipe.—Merchants continue to report a slow movement, and while they are buying a little more freely large orders are almost entirely lacking. It is considered too near the end of the year to make any material addition to stocks, especially as prompt delivery can be easily obtained. Oil country goods remain very quiet.

Cast Iron Pipe.—The tonnage of business placed in the last two weeks is rather light, though small orders are numerous and a fair volume of new inquiry is coming out. The Pacific Gas & Electric Company has ordered small lots for use at San Francisco, Oakland and Sacramento, and the Monterey County Gas & Electric Company has ordered a lot of water pipe. The city of Long Beach has placed its order for 1700 tons of 12 to 24-in. pipe with the United States Pipe Company, to be delivered by sea. There is considerable inquiry from Oregon and Washington, and a substantial tonnage for that district has been booked of late. The San Diego Consolidated Gas Company has placed a small order, and the city of Phoenix, Ariz., is in the market for 500 tons of 6-in.

Pig Iron.—The requirements of local foundries are very small at present, and with the annual inventory season near at hand the tendency is to avoid any accumulation of stock. Supplies on hand and under contract, however, are moderate, and a fair movement is expected after the first of the year. According to reports from China the Han Yang furnaces are in the hands of the revolutionists, and it is impossible to move any pig iron from there. This may cause some delay in the delivery of Chinese pig iron on contracts. Prices show no quotable change, English, Continental and Chinese iron of ordinary foundry grade being quoted at $20 to $24, while No. 2 Southern is nominal at $20.50 to $21.

Old Material.—Continued dullness and heavy accumulations of cast iron scrap have weakened the market, and a considerable tonnage has been moved at $14 per net ton, with prospects of some additional business at the same figure. Steel melting scrap finds little demand locally, and the only event of any interest is the shipment of 500 tons to Italy. Prices are quoted as follows: Cast scrap, per net ton, $14; steel melting scrap, per gross ton, $10.50 to $11; wrought scrap, per net ton, $11 to $15; rerolling rails, per net ton, $11.

Buffalo

BUFFALO, N. Y., October 31, 1911.

Pig Iron.—Inquiry has been somewhat checked by the disturbing influences of the news of the reduction of Lake ore freight rates, the cancellation of the Hill ore leases and the suit for the dissolution of the Steel Corporation. The new business was comprised largely of orders for consumption within the next two or three months. Consumers' interest in forward delivery business has apparently subsided temporarily. Producers are also apathetic regarding sales for next year, owing to the unremunerative prices which obtain and the evident belief among consumers that there is a possibility of the bringing about of a still lower price situation. All furnaces are shipping heavily on contracts and in excess of production, and the reports from the territory tributary to this market are that foundries are becoming increasingly busy and are melting as much iron as at any time in their history. This has a tendency to steady the situation so far as the producers are concerned. Harriet X furnace of the Wickwire Steel Company resumed operations last week after being blown out several weeks for relining and repairs. We quote as follows, f.o.b. Buffalo, for current quarters and first quarter of 1912:

No. 1 X foundry	$13.75 to $14.00
No. 2 X foundry	13.25 to 13.75
No. 2 plain	13.00 to 13.50
No. 3 foundry	13.00 to 13.25
Gray forge	13.00
Malleable	13.75 to 14.25
Basic	13.75 to 14.25
Charcoal	16.50 to 17.25

Finished Iron and Steel.—The demand in finished products for the week just ending shows less inclination on the part of buyers to lay in stock and that there has been a return to the hand-to-mouth buying which has characterized the market during the past few months. Prices in this territory are practically the same as for last week: Steel bars, 1.10c., for large lots, and 1.15c. for small orders; shapes, 1.20c. and 1.25c. Inquiries for bar materials aggregating a good tonnage have been received from the Canadian trade during the week. Specifications for barbed wire for western Canada for the spring trade are coming forward in fairly good volume for shipment before the close of the Lake season. Among the orders from Canada received during the week is included 150,000 boxes of tin plate for delivery during 1912 and one for 300 tons of plates to be used in the construction of a large penstock for power generation. The week in structural lines shows some reduction in activity as compared with the earlier weeks of the fall season, but a fairly good volume of business is coming up for bids right along. Plans are being prepared by the Strauss Bascule Bridge Company, Chicago, for a steel bascule bridge 50 ft. wide by 165 ft. in length to be built by the United States Government over the ship canal at Ferry street, Buffalo. Bids for steel and for erection will be received the latter part of December

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by Lieut.-Col. J. G. Warren, Corps of Engineers, U. S. A., Buffalo. Bids are to be received November 8 for the 2500 tons of steel for the New York Telephone Company's building, Buffalo. The Buffalo Structural Steel Company was low bidder for the 200 tons of steel for the New York Telephone Company's substation at Elmwood avenue and Allen street, Buffalo, and the Lackawanna Bridge Company was low bidder for the 350 tons of fabricated steel for the new Shea theatre, Buffalo.

Old Material.—The market still lacks any semblance of activity. Inquiry is exceedingly limited and there has been only a small amount of buying in any line during the week. Heavy melting steel was the largest item in the small volume of transactions noted. The most encouraging feature of the situation is that there is a slight increase in the movement of material on old contracts. Prices are unchanged. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$12.50 to $13.00
Low phosphorus steel	16.00 to 16.50
No. 1 railroad wrought	14.00 to 14.50
No. 1 railroad and machinery cast scrap	13.50 to 14.00
Old steel axles	18.50 to 19.00
Old iron axles	22.00 to 22.50
Old car wheels	13.00 to 13.50
Railroad malleable	12.75 to 13.00
Boiler plate	12.50 to 13.00
Locomotive grate bars	11.00 to 11.50
Pipe	9.25 to 9.50
Wrought iron and soft steel turnings	7.15 to 7.40
Clean cast borings	7.00 to 7.25

Boston

BOSTON, MASS., October 31, 1911.

Old Material.—Conditions are unchanged in the scrap metal market, a general dullness pervading all lines. The Canadian market holds up, however. The prices quoted below are those offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points, taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of $2.30 a ton is included. Mill prices are approximately 50 cents a ton more than dealers' prices.

Heavy melting steel	$9.50 to $10.00
Low phosphorus steel	11.45 to 11.95
Old steel axles	14.00 to 14.50
Old iron axles	17.00 to 18.00
Mixed shafting	12.75 to 13.25
No. 1 wrought and soft steel	10.50 to 10.75
Wrought iron pipe	8.75 to 9.00
Skeleton (bundled)	7.00 to 7.50
Cotton ties	7.00 to 7.50
No. 2 light	4.50 to 5.00
Wrought turnings	5.00 to 5.50
Cast borings	4.50 to 5.00
Machinery, cast	12.50 to 13.00
Malleable	9.25 to 9.75
Grate bars	6.00 to 6.50
Stove plate	8.00 to 8.50

J. Lipsitz, dealer in old material, Chelsea, Mass., has purchased a large tract adjoining his present yard for the purpose of increasing his facilities. The Boston & Albany Railroad is building an addition to the yard trackage. The yard will be equipped by January 1 with powerful shears, a hoisting engine and a drop for breaking heavy iron. Mr. Lipsitz expects to have his yard one of the best equipped of its kind in New England.

The German Iron Market

BERLIN, October 20, 1911.

This week a number of price advances for iron and steel are to be reported. The Pig Iron Syndicate has at last given out its list for the first half of 1912, and begins to take contracts today at the new prices. These are as follows, with the last previous price in parentheses for comparison: Hematite, 74.50 marks (70 marks); foundry No. I, 70.50 (66); No. III, 67.50 (64). These are the prices at Oberhausen, while the old ones were at furnace. Steel-making iron of the Siegerland district is raised to 64 marks at Siegen, against 62 to 63 marks. The Luxemburg-Lorraine qualities have been advanced variously from 1 to 2 marks. The Syndicate is selling at seaport points at 3 to 4 marks below the official list in order to meet English competition. In the Silesian district an advance of bars and plates, both of basic steel and wrought iron, by 2.50 to 5 marks has been reported this week.

An Advance in Plates Expected

It has been expected that the Steel Works Union would raise the price of half-rolled steel material in view of the higher prices for pig; but it appears that no such intention exists for the present. On the other hand, an early advance of plates by the convention controlling that specialty is looked for with practical certainty. This will be due, not to the higher prices of pig, but to the unusually active state of business in plates. It is reported that some of the big concerns with a mixed production will move an advance of the 1912 prices at the next meeting of the convention. It seems obvious that the state of business would admit of higher prices, especially in view of the fact that export prices have already risen. The net cash price of heavy basic steel plates at the mills is now 113 marks for export, equivalent to 121 marks f.o.b. Antwerp. Business in plates has increased further, and the mills are unable to keep up with their orders. Later on, however, the plate market will feel the effect of new competition, as the Gelsenkirchen Company, as well as the Stinnes concern and other companies, is building new plate mills.

The general tone of the market is optimistic. Mills are generally well employed, and it is expected that conditions will rather improve than the reverse. Political anxieties in connection with Morocco, Tripoli and China are playing no part in the general market aspect. The export demand for various steel products remains very good. Thus the wire rod association increased its exports in September to 15,200 tons, as against 11,300 tons in August. The wire mills report that their business has grown active, but prices remain unremunerative, ranging between 13.25 and 13.50 marks per metric cwt. in the home market.

Steel Works Union Renewal

The Steel Works Union reports that its business this month has kept about up to the volume of September. Some surprise has been expressed that the Union did not take initial steps at its last monthly meeting toward its prolongation; and now the call for the next monthly meeting, which will be held on Monday, contains no reference to action in that matter. It is reported from the trade, however, that a more optimistic feeling regarding the renewal now prevails.

Tin Plate Mills to Be Built

A revival of interest in tin plate manufacture in Germany has been observed recently. It is a remarkable fact that, although the country has the most efficient iron trade among all European countries, the manufacture of tin plates has been much neglected, despite the fact that there is an adequate protective duty. By far the greater part of Germany's consumption is imported from England. This, however, will probably be changed in time. In the Rhenish-Westphalian district the Van der Zypen-Wissen Works are erecting a tin plate mill with a capacity of 20,000 tons; and this week it is reported from the Silesian district that the Eisenhütte Silesia has also decided to erect a mill.

The big Luxemburg fusion of the Burbach, Esch and Düdelingen concerns, which is just now being completed, will lead to extensive expansion in producing capacity. The concern has bought ground at Esch in Luxemburg for the enlargement of its plant there. One furnace will be rebuilt to a capacity of 200 tons a day, and two new furnaces of like capacity will be erected, while two further ones are projected, to be built later on. It is proposed to raise the pig iron capacity of the Esch establishment to 1000 tons a day. This has hitherto been only a furnace plant, but now a basic steel plant will be added, having a capacity of 1500 tons a day, with a blooming mill of the same capacity. A bar mill will also be erected, but of less capacity. It is expected that all these new mills will go into operation in about two years.

It is reported on good authority today that negotiations have been nearly completed for a fusion of the Mannstaedt Façoneisenwalzwork, one of the best-known manufacturers of shaped bars in Germany, with the Aumetz-Friede Company of Lorraine. The manager of the latter has already been elected to the Mannstaedt board.

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Iron and Steel Exports

Germany's exports of iron and steel during the past nine months have been as follows in metric tons:

	1911	1910
Pig iron	567,287	564,761
Waste and scrap	130,000	114,191
Steel material	471,233	351,232
Beams and structural forms	294,702	303,665
Bands and hoops	88,708	85,825
Bars, simple and shaped	481,969	403,163
Steel rails	380,307	348,343
Track supplies	98,576	128,508
Heavy plates	217,188	188,081
Medium and thinner plates	79,516	69,795
Wire rods	105,018	88,983
Wire	286,746	300,977
Wire nails	43,789	51,673

The news from the Belgian market this week indicates that the strong tendency of prices continues. A yesterday's dispatch from Brussels states that the export price of basic steel products has been raised 1 shilling—heavy plates to 120 to 121 shillings; plates of 3/32-in. thickness, to 129 to 131 shillings, while plates of 1/16-in. thickness rose 2 shillings to 130 to 132 shillings. The home price of beams was raised 2.50 francs.

New York

NEW YORK, November 1, 1911.

Pig Iron.—New business has dropped off sharply. It appears that a good many foundries, whether or not they intended to buy for the early months of 1912, will have iron in their yards at the end of the year that will carry them for from one to three months in the new year. Much of the iron of such buyers was contracted for in the strong buying of June and July. There has been no like scale of buying since midsummer and there is no immediate prospect of it. The last real buying movement ended with furnaces taking a stand for higher prices for 1912 delivery. In the past four months, while there has been a certain amount of selling at higher prices than the basis of $13 to $13.25, Buffalo, for example, on which large business was done in the summer, the net outcome has been to bring the market back to that basis. In the past week business in the New York district and in New Jersey has been chiefly in 100-ton and 200-ton lots. One sale of 1000 tons is reported at Newark. The New England buyer whose inquiry brought representatives of seven firms in haste to his office has decided not to contract at this time. Purchases in the New England district, all told, have, probably, not been more than 1500 to 2000 tons in the past week. A good many melters are still urging the furnace companies to expedite shipments. Quotations are as follows for Northern iron at tidewater: No. 1 foundry, $15.25 to $15.50; No. 2X, $14.75 to $15.25; No. 2 plain, $14.50 to $14.75. For Southern iron we quote $15 to $15.25 for No. 1 foundry and $14.50 to $14.75 for No. 2 foundry.

Finished Iron and Steel.—Last week's description of the market conditions could well be reprinted to explain the situation at this writing. Few decisions have been made regarding structural work projected and practically nothing new has been offered for figuring. About the only encouragement recently offered is a 2000-ton bridge at Williamsport, Pa., for the Pennsylvania Railroad. One reason advanced for the present period of marked quiet is that the American people as a whole want an industrial rest; that it is not due to the political situation solely, or to overbuilding or to hesitancy on the part of financial interests. Fabricated prices continue low, as do prices of plain material, but the prevailing range is above the bottom prices ruling elsewhere. Business in bar iron has dropped off still more than last week, but refined iron is generally held between 1.25c. and 1.30c., delivered in New York. One maker has been out of the market for some time except for finished iron products, and reports a satisfactory volume of business in bolts, railroad spikes and the like, 75 per cent. of which have gone to the railroads. The volume of business in plates has also been materially reduced. Eastern mills which have been running for some time on small-lot orders, are considering operating on part time, if indeed some are not already doing so. In addition to the structural awards given last week may be mentioned the following recent contracts: Building for the New York Shipbuilding Company, 1600 tons, to the McClintic-Marshall Construction Company; bridge for the Buffalo, Rochester & Pittsburgh Railroad, at Bradford, Pa., 350 tons, to the Lackawanna Bridge Company; addition to the plant of the Sprague Electric Company, 300 tons, to Levering & Garrigues Company; small bridge for the Seaboard Air Line, 200 tons, to the Virginia Bridge & Iron Company; bridge for the Buffalo, Rochester & Pittsburgh Railroad, 700 tons, to the American Bridge Company; Metropolitan storage warehouse, Boston, 400 tons, to the Boston Bridge Company; Orpheum Theater, Philadelphia, 250 tons, to the Philadelphia Steel & Wire Company. Quotations are: Plain structural material and plates, 1.36c. to 1.46c.; steel bars, 1.26c. to 1.31c.; bar iron, 1.20c. to 1.30c., all New York. Plain material and plates from store, New York, 1.65c. to 1.75c.

Cast Iron Pipe.—F. V. Smith & Son were awarded the contract on Tuesday for furnishing and laying 6800 tons of 48-in. pipe in South Brooklyn by the New York Board of Water Supply. As the previous purchase of pipe for the same system of water supply is understood to have been made at a shade under $20 per net ton delivered, this new lot will probably be bought at a low figure. No public lettings of importance are announced for this vicinity, but a good demand is experienced for small lots for prompt shipment. Carload lots of 6 in. continue to be quoted at $21 to $22 per net ton, tidewater.

Old Material.—Conditions show no change for the better. Such buying as now occurs is merely from hand to mouth, no large lots being reported. Steel works are well supplied with stock or are covered by contracts for a considerable period, and the rolling mills are not in the market to any extent. Foundries are taking cast scrap at ruling prices, but seldom in quantities over 50 tons. Rejections appear to be as numerous as at any time, and dealers having contracts to fill appear to be in a worse plight than those having no orders. Purchases are made by the former for the purpose of filling their contracts, but when rejections are made they are either compelled to grant concessions which leave them without profit or obliged to store the material in their yards and thus lock up their capital. Dealers' prices, per gross ton, New York and vicinity, are quoted as follows:

Old girder and T rails for melting	$9.25 to	$9.50
Heavy melting steel scrap	9.25 to	9.50
Relaying rails	20.00 to	21.00
Rerolling rails (nominal)	11.25 to	11.75
Old iron car axles	19.00 to	19.50
Old steel car axles	15.00 to	15.50
No. 1 railroad wrought	11.00 to	11.50
Wrought iron track scrap	10.50 to	11.00
No. 1 yard wrought, long	10.25 to	10.75
No. 1 yard wrought, short	9.25 to	9.75
Light iron	3.75 to	4.25
Cast borings, clean	5.50 to	6.00
Mixed borings and turnings	4.75 to	5.25
Wrought turnings	5.75 to	6.25
Wrought pipe	8.50 to	9.00
Old car wheels (nominal)	9.50 to	10.00
No. 1 heavy cast, broken up	10.00 to	10.50
Stove plate	7.75 to	8.25
Locomotive grate bars	7.75 to	8.25
Malleable cast	9.75 to	10.25

Ferroalloys.—Ferromanganese is firm at $38, Baltimore, and some sellers are asking more. Large consumers have apparently covered their needs for the present year and there are inquiries out for delivery over the first quarter of next year. The usually quoted price is $38.50. Ferrosilicon is quiet at around $60.50, delivered Pittsburgh, for early shipment.

Cincinnati

CINCINNATI, OHIO, November 1, 1911.—*(By Telegraph.)*

Pig Iron.—Buyers are generally hesitating about placing orders for more than an immediate supply, and while there are rumors that considerable business is being booked under cover, when traced down the fact is revealed that even the larger consumers are only providing for nearby requirements. The cancellation of the Steel Corporation's ore leases, together with other recent developments that are locally considered as being of a semi-political nature, has exerted a halting tendency on both the larger and smaller consumer. There are rumors from other sections, but from buyers sources, that $10, Birmingham, has been slightly bettered on some prompt shipment No. 2 foundry. So far as this market is concerned, $10 is minimum, although, as previously reported, deliveries have been extended and ten-dollar iron is offered for shipment throughout the first half. Northern iron is moving slowly and, following the lead of Southern producers, Northern furnaces would book first half business at the present prompt shipment quotation of $13, Ironton. Recent sales include one for 500 tons of Southern analysis iron to an Illinois melter, based on $10 for No. 2 foundry,

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November-December shipments. For the same delivery a central Ohio firm paid $9.25, Birmingham, for 100 tons of No. 4 foundry, indicating that the lower grades are scarcer. Among general inquiries before the trade is one for 900 tons for a northern Ohio manufacturer. Michigan territory also furnished several requests for quotations on medium-sized lots. Malleable is quoted at $13 for either prompt or first quarter shipment. Based on freight rates of $3.25 from Birmingham and $1.20 from Ironton we quote, f.o.b. Cincinnati, as follows, for prompt shipment:

Southern coke, No. 1 foundry and 1 soft	$14.00 to $14.25
Southern coke, No. 2 foundry and 2 soft	13.25 to 13.75
Southern coke, No. 3 foundry	12.75 to 13.25
Southern coke, No. 4 foundry	12.50 to 13.00
Southern gray forge	12.50 to 13.00
Ohio silvery, 8 per cent. silicon	16.95 to 17.20
Lake Superior coke, No. 1	14.70 to 14.95
Lake Superior coke, No. 2	14.20 to 14.45
Lake Superior coke, No. 3	13.70 to 13.95
Basic, Northern	14.20 to 14.45
Standard Southern car wheel	25.50 to 25.75
Lake Superior car wheel	19.00

(By Mail.)

Coke.—New business in both furnace and foundry grades continues scarce, although shipments on contracts are said to be moving along in a satisfactory manner. The automatic curtailment in production to meet current requirements enables producers to maintain prices, and when any reduction in the regular market figures is reported it is generally on a carload or two that was already loaded and had to be moved. We continue our quotations of $1.50 per net ton at oven on Connellsville furnace coke for prompt shipment, and around $1.60 to $1.65 for Wise County and Pocahontas brands. Furnace coke is stationary in all three fields at from $1.90 to $2 for immediate shipment. Future contract business on both 48-hr. and 72-hr. coke would be taken on at an advance of about 10c. to 25c. per net ton.

Finished Material.—Buying is mainly confined to small lots, and competition in every line is keen. Steel bars appear to be in a little better demand, and while 1.15c., Pittsburgh, is the regular quoted figure on limited quantities, desirable tonnages could be placed at 1.10c. This same condition applies to bands. Hoops are now quoted at 1.30c., and so far as this territory is concerned it is not known that this price has been shaded. The local warehouse price on structural material is 1.70c.

Old Material.—Business is almost at a standstill. The rolling mills and foundries are purchasing on a hand-to-mouth basis, and as prices are very weak it is an extremely hard matter for dealers to get any large contracts signed up. As a consequence the dealers are indifferent about taking on any additional stocks, and practically every kind of scrap material is in poor demand. The minimum figures given below represent about what the buyers are willing to pay for delivery at their yards in southern Ohio and Cincinnati, and the maximum figures the average selling prices f.o.b. at yards:

No. 1 railroad wrought, net ton	$9.50 to $10.25
Casting borings, net ton	4.50 to 5.00
Steel turnings, net ton	5.50 to 6.00
No. 1 cast scrap, net ton	9 00 to 9.75
Burnt scrap, net ton	6.25 to 6.75
Old iron axles, net ton	16.25 to 16.75
Bundled sheet scrap, gross ton	5.75 to 6.50
Old iron rails, gross ton	13.00 to 13.75
Relaying rails, 50 lb. and up, gross ton	20.75 to 21.50
Old car wheels, gross ton	9.50 to 10.25
Heavy melting steel scrap	9.25 to 10.00

Metal Market

NEW YORK, N. Y., November 1, 1911.

The Week's Prices

Cents Per Pound for Early Delivery.

	Copper, New York.			Lead		Spelter	
Oct.	Lake.	Electrolytic.	Tin, New York.	New York.	St. Louis.	New York.	St. Louis.
26	12.62½	12.50	41.80	4.25	4.15	6.35	6.20
27	12.60	12.45	41.00	4.25	4.15	6.35	6.20
28	12.55	12.40	....	4.25	4.15	6.35	6.20
30	12.50	12.37½	41.50	4.25	4.15	6.35	6.20
31	12.50	12.37½	41.62½	4.25	4.15	6.35	6.20
Nov. 1	12.50	12.37½	41.62½	4.25	4.15	6.35	6.20

Copper has weakened although it is somewhat scarce for early delivery. Tin is a little higher but steady. Spelter continues high and scarce. Lead is firmer.

Copper.—Copper is about ⅛c. lower than it was a week ago for both Lake and electrolytic. The metal is somewhat scarce for early delivery but the demand has lessened noticeably and the buying now is only desultory. It is believed that most of the large consumers have filled their wants until the end of the year and most of the inquiries coming forward are for delivery in January. Electrolytic is now 12.37½c. and Lake, 12.50c. The London market is steady and spot was selling this morning at £55 10s. and futures at £56 3s. 9d. The exports of copper in October were lighter than any month since February, amounting to only 21,904 tons.

Copper Averages.—The Waterbury average for October was 12.50c. The average price of Lake copper in New York for the month was 12.53c. and the average price of electrolytic was 12.31c.

Pig Tin.—The new rule of the London Exchange allowing for deliveries of any grade of pig tin under a three months' contract went into effect to-day, and the market has steadied noticeably. The effect of this rule will be that speculators in pig tin, instead of being able to control the market by having only 50 per cent. of the world's supply, will have to obtain control of all the available tin to effect a corner. Under ordinary circumstances the statistics for October tin, made public this morning, would tend to advance the market as they show a falling off in the visible supplies. This has been discounted, however, by a reduction in the price of futures in the London market in anticipation of the new standard tin rule. In the London market this morning spot tin was sold for £190 and futures for £187, whereas a week ago both spot and futures were selling at £191 12s. 6d. The domestic market is quiet and the metal is in fair local supply. Stocks for immediate delivery, however, are fairly well concentrated. The October statistics, compiled by C. Mayer, secretary of the New York Metal Exchange, show that deliveries into consumption during October were good, amounting to 3500 tons, and the total deliveries for ten months were 450 tons under the total deliveries for the first 10 months of last year. The total visible supply October 31 was 4022 tons below that of October 31, 1910. The arrivals in this country during the month were 3194 tons.

Tin Plates.—The price of tin plates at Swansea, Wales, has been reduced 2½d. and it is now 13s. 3d. The domestic demand is not heavy, but exports are large. The usual quotation for 100-lb. coke plates is $3.64.

Lead.—Lead is not in heavy demand and in the West independent sellers are contesting the market with the leading interest and as a rule are making sales at 2½ points under the price quoted by the American Smelting & Refining Company. In New York the price is 4.25c. and in St. Louis 4.15c. The market here is firm.

Spelter.—Spelter is decidedly scarce and the market is uncertain. There are rumors of manipulations on the part of some of the leading producers and sellers, but the fact remains that spot supplies are hard to get. Spelter could be bought all the week in St. Louis at 6.20c. and in New York at 6.35c., but that has generally been the bottom price. In some cases consumers who were short of stocks have been obliged to pay more.

Antimony.—Excepting a small demand from the jobbers, antimony is dull. Hallett's is not very plentiful, but it can be had at 7.70c. Cookson's is offered at 8c. and perhaps a little less. Chinese and Hungarian grades are offered at from 6.75c. up.

Aluminum.—One ton of aluminum in ingots, guaranteed over 99 per cent. pure, was recently purchased in New York for 19.80c. a pound. As this order was offered generally to sellers for a number of weeks before a concession under 20c. could be obtained, it is believed the price is rock bottom on the basis of early payment after delivery.

Old Metals.—Trade is dull, without any change in dealers' selling prices, which are nominally as follows:

	Cents per lb.
Copper, heavy and crucible	11.75 to 12.00
Copper, heavy and wire	11.37½ to 11.50
Copper, light and bottoms	10.50 to 10.75
Brass, heavy	8.00 to 8.25
Brass, light	6.50 to 6.75
Heavy machine composition	10.25 to 10.50
Clean brass turnings	7.75 to 8.00
Composition turnings	8.50 to 9.00
Lead, heavy	4.15
Lead, tea	3.90
Zinc, scrap	4.50

Chicago

OCTOBER 30.—The past week has shown little departure from the commonplace and most prices have remained unchanged, although in some directions it is

THE IRON AND METAL MARKETS

felt that current quotations are being artificially maintained. Tin in this market is slightly lower. We quote at Chicago: Casting copper, 12.37½c. to 12.50c.; Lake, 12.62½c. to 12.75c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, carloads, 42c.; small lots, 45c.; lead, desilverized, 4.25c. to 4.30c., for 50-ton lots; corroding, 4.50c. to 4.55c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.25c. to 6.30c.; Cookson's antimony, 9.25c., and other grades, 8.25c. to 8.75c., in small lots; sheet zinc is $8, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 10.75c.; copper bottoms, 9.62½c.; copper clips, 10.25c.; red brass, 9.75c.; yellow brass, 7.75c.; lead pipe, 4c.; zinc, 4.25c.; pewter, No. 1, 26c.; tinfoil, 32c.; block tin pipe, 36c.

St. Louis

OCTOBER 30.—The metal market here shows a fair demand, but nothing of extraordinary character. Tin is quotable at 41.45c. The figures on copper are 12.85c. for Lake and 12.75c. for electrolytic. Cookson's antimony is 8.35c. In lead the market shows a slight improvement, the quotation being 4⅛c. Spelter is strong at 6.20c. In the Joplin market the past week the highest price for the year was paid for zinc blende, the contract offerings being in excess of $51 for the choicest lots. The basis price for grades carrying 60 per cent. metallic zinc was fixed at $46.99. The bulk of the ore was sold, however, in the open market, where the basis ranged down from $45 to even $40 and the choice lots brought $48. Calamine brought $24 and $25 per ton on an assay basis of 40 per cent. metallic zinc, the choice lots commanding $32. Lead was stronger at $56 to $57 per ton in the ore. We quote miscellaneous scrap as follows: Light brass, 4c.; heavy brass and light copper, 8c.; heavy copper and copper wire, 9c.; zinc, 3c.; lead, 3.25c.; pewter, 20c.; tinfoil, 29c.; tea lead, 3c.

Iron and Industrial Stocks

NEW YORK, N. Y., November 1, 1911.

The stock market was seriously disturbed in the past week by the news that the United States Government had at last brought action against the United States Steel Corporation under the Sherman anti-trust act, which became known after the close of the Stock Exchange on Thursday, October 26. United States Steel common, which had sold at 60 on Thursday, declined to 50 on Friday, with the total of sales for the day amounting to 702,200 shares. The preferred stock, which had sold at 109⅜ on Wednesday, declined to 103 on Friday. Both classes of stock recovered to some extent from their depression, the preferred selling up to 105¼ on Saturday and the common up to 54¼ on Monday. Other stocks naturally sympathized with the decline in United States Steel stocks. The range of prices from Wednesday of last week to Tuesday of this week on active iron and industrial stocks was as follows:

Allis-Chalm., com...	2½- 3	Nat. En. & St., com.	13¾- 14½
Allis-Chalm., pref...	10 - 10⅞	Pressed Steel, com..	28 - 30½
Beth. Steel, com....	27¼- 28¾	Pressed Steel, pref.	95⅛- 95½
Beth. Steel, pref....	55 - 56	Railway Spring, com.	26 - 27¼
Can, com.....	9⅜- 10½	Railway Spring, pref.	97¼- 99
Can, pref.....	83½- 86⅛	Republic, com.....	18 - 22
Car & Fdry., com...	46 - 48½	Republic, pref.....	74½- 83⅞
Car & Fdry, pref...113	-114	Sloss, com.....	38 - 40
Steel Foundries.....	27½- 29	U. S. Steel, com...	50 - 60
Colorado Fuel.....	25⅛- 27¼	U. S. Steel, pref...103	-109⅜
General Electric....146¼-150¾		Westg. Elec.....	60¾- 64
Gr. N. Ore Cert....	41 - 42¾	Chic. Pneu. Tool...	44½- 45
Int. Harv., com....102	-108	Cambria Steel.....	43¼- 44⅝
Int. Harv., pref....117	-121	Lake Sup. Corp....	27¼- 28⅝
Int. Pump, com....	23 - 27¼	Crucible Steel, com.	9¾- 10⅛
Lackawanna Steel.....	30	Crucible Steel, pref.	73¼- 76¾
Locomotive, com....	32⅛- 33¾	Harb. Wk. Ref., com....	45
Locomotive, pref....102	-103		

Dividends Declared

The Pressed Steel Car Company, regular quarterly, 1¾ per cent. on the preferred stock, payable November 22.

The International Harvester Company, regular quarterly, 1¾ per cent. on the preferred stock, payable December 1.

The Peck, Stow & Wilcox Company, quarterly, 1¾ per cent., comparing with 2½ per cent. quarterly for some time past with usual extras on August 15 yearly of from 2 to 6 per cent. The stock was recently increased from $1,250,000 to $1,500,000.

The United States Steel Corporation, regular quarterly, 1¾ per cent. on the preferred stock, payable November 29, and regular quarterly, 1¼ per cent. on the common stock, payable December 30.

New Tools and Appliances

This is essentially a news department for which information is invited.

Turning Lathes.—The Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass., has recently brought out a 14-in. x 6-ft. plain turning lathe. Three spindle speeds are available, the variation being secured by sliding gears from the driving pulley. The same number of feed changes are provided, and these are secured by three-step pulleys, a belt and a splined rod. One of the special features of the lathe is a brake for the headstock spindle. This is brought into engagement when the shifter rod throws the driving belt on the loose pulley and acts on the rim of the faceplate. The equipment of the lathe includes an oil reservoir underneath the pan base and an oil pump mounted on the pan.

A Vertical Surface Grinder.—An automatic surface grinder capable of handling work having a maximum width of 1 ft. and a length of 3 ft. has been placed on the market by the Hemming Brothers Company, New Haven, Conn. The body of the machine is cast in one piece with the brackets which carry the spindle. This part is driven at a constant speed and is provided with ball thrust bearings and an automatic take-up which prevents vibration of the wheel when running. The spindle drive is by a 4-in. belt to a 12-in. pulley mounted on an upper horizontal shaft, at the opposite end of which is a rawhide pinion meshing with a large bevel gear on the upper end of the spindle. Eight graduations of power feed, ranging from 2 to 10 ft. per minute, are provided for the table, and changes from one to the other can be made while the machine is in motion by simply shifting a lever. Hand feed is also provided for the table, which can be adjusted vertically either by hand or automatically. The automatic feeds range from 0.00025 to 0.010 in. per traverse of the platen and an automatic stop enables easy duplication. The platen is entirely surrounded by a pan which catches the cooling water that is fed to the work through the hollow grinding spindle and conducted back to the circulating pump. Guards are provided for the wheel and all gears and the working parts located on the outside of the machine so as to be readily accessible.

Ball and Roller Bearings.—The Norma Company of America, 20 Vesey street, New York, N. Y., is manufacturing an annular ball bearing which differs from the usual construction by having the outer race open on one side. In this way it is possible to take the bearing apart easily and the parts can be mounted independently of each other. Bronze is used for the ball cage, which has an elastic grip on the balls at their axes of rotation. All of the ordinary sizes are made for light, medium and heavy service. In addition the company is also manufacturing roller bearings for medium and heavy duty. These are also of the open type and can be readily taken apart and the parts mounted separately. The rollers are held in a cage to prevent binding. To take care of any slight error in mounting, the inner race is cylindrical, while the outer one is slightly convex. These bearings are made in the same sizes as the ball bearings and are said to be capable of carrying more than twice the radial load that the same size of ball bearing will sustain.

Grinding Compound.—The fact that a grinding wheel is nothing more or less than a series of microscopic cutting points requiring lubrication to make the grinding process more effective has been taken into consideration by the White & Bagley Company, Worcester, Mass., who has developed a compound for use in all kinds of grinding.

The annual meeting of the National Gas and Gasoline Engine Trades Association will be held at the Hotel Hollenden, Cleveland, Ohio, December 5 to 8 inclusive. The 6th has been set aside as Engine Manufacturers' Day, in accordance with a request made at the last convention by the Engine Manufacturers' Section that time be allowed at coming conventions for its own special meeting. The mornings of other days will be devoted to exhibitors and the afternoons to a programme which is now being arranged.

Patents and the Public Welfare

BY F. W. BRADY

With no intention of quoting or analyzing recent court proceedings and decisions in cases which have involved industrial contentions in which patents have materially figured, it is well to note the ominous cloud on the horizon which threatens every enterprise which controls, owns or operates under letters patent of the United States. In the endeavor to interpret and enforce our national statutes, every resource has been employed to disintegrate the centralized forces which have been alleged to work harm to the nation. In this regard there are no comments to offer. However, the injection into these proceedings of a possible qualification of the rights granted with a patent merits the deep consideration of every person who has the interest and progress of our nation at heart.

From a vague and small beginning which made reference to certain alleged questionable procedure by which associated concerns might, by intent, use their patents collectively, for the ostensible purpose of saving the expense of continued litigation, but, by inference the purpose might be construed to be the crushing of competition, the attention given to the quantity and manner of patent ownership and control has been more and more marked until it appears to assume the form of a direct menace to our industrial development.

Our patent laws and the authorized procedure thereunder have always, without qualification, provided a monopoly as far reaching as human language may prescribe. The official patent document, executed by the Commissioner of Patents, to quote its language, grants "unto the said John Smith, his heirs and assigns, for the term of seventeen years from ———, the exclusive right to make, use and vend the said invention throughout the United States and Territories thereof." Years ago this grant was authorized, and, with the restriction placed around the objects which are legally patentable, there has never been a doubt that the inventor, his heirs or assigns could barter and dispose of the rights as became fitting on the occasion.

From the viewpoints of patentee and patent owner or licensee, we have been assured that one form of monopoly has thus been provided and legalized by the issuance of a patent by the United States Government. This has been the sole inducement offered in return for the conception, mental effort, periods of experiment and development, and the expense connected therewith. By what theory of political economy should persons devote their energies to the public welfare, even though their personal profit may be a motive, in part, if, after a measure of success, they are to be questioned as to the disposal of well-deserved rights and their guaranteed privileges, one of the latter being the right to assign their grants as they see fit?

A patent procured and issued under our flimsy system has no defined standing or power until the highest tribunal has passed a final opinion upon its validity. In such event, for the attention and disbursements in behalf of the prosecution or defense of our rights, something tangible and of worth is in our possession, but without any questions or allusions as to the scope of the powers granted with the patent, as to its use or sale.

In view of past decisions and practices, it is difficult to reconcile the known powers given with the issuance of a patent with the mere mention of the word "patent" as a part of any alleged illegal procedure of the owners thereof during the now current trust-dissolving attacks. The line of demarcation between inventor's rights and the public's privileges to the brain and efforts of the former is being slowly shifted toward the narrower zone of the patentee, against all precedent and in contradiction to his vested rights.

Any individual, firm or corporation manufacturing any sort of patentable merchandise is bound, for future salvation, to procure or acquire numerous patents; not for immediate use, but to insure the possibility of meeting changed conditions or developments of the future. This is but foresight, with the knowledge that IF an invention shall become of use it is the owner's property without question. It comes to pass that, out of one hundred patents owned or under license, one may be worth more than the cost of its procurance. The balance is deadwood, pure and simple, and represents cash outlay for no return. The one case of value may be far reaching in its scope and be the means, in whole or in part, of producing wares which no others can meet in the open market after striving to "get around" the patent, or through the substitution of another system. The unfortunates may find their businesses threatened; their existence as an enterprise in danger of annihilation. As the sale of goods or wares is a matter of buyers' choice, no law seems applicable to compel a division of patent rights that all may participate in the benefits arising therefrom.

Are we approaching a state of compulsory license whereby our inventions shall become public property for fear of the prosperity which may come of one's efforts to better or cheapen his product? Or has the trust and monopoly antagonism become so acute that, after all other means have been exhausted, the privileges given to an inventor, "his heirs and assigns," are to be confiscated or qualified? The shadow of this deplorable state is already before us, and deserves the attention of the entire industrial world, not only on the western hemisphere but abroad, where our destiny as producers and developers is of marked concern.

The Sherman Act and the Labor Trust.—At a meeting of the Board of Directors of the National Association of Manufacturers in New York City last week a resolution was passed asserting that "the National Association of Manufacturers unqualifiedly stands for the equal enforcement of law," and demanding "the enforcement of the Sherman anti-trust law upon the restraint of trade practiced by labor unionism, which already stands convicted before the Supreme Court of the United States, with the same vigor as corporations and individuals are now being prosecuted under that law."

The Northern Equipment Company, Chicago, announces that it has completed a sales arrangement for the Copes boiler feed regulators and pump governors with the Dravo-Doyle Company, Pittsburgh, Pa., which has recently established a steam specialty department. D. D. Pendleton, who has for the past five years represented the Northern Equipment Company in the Pittsburgh district, has completed arrangements with the Dravo-Doyle Company so that it will have all rights in that district, thus giving the latter company complete jurisdiction over the Pittsburgh, Cleveland, Philadelphia, Chicago and West Virginia territories.

The annual meeting of the American Society of Naval Architects and Marine Engineers will be held November 16 and 17, at 29 West Thirty-ninth street, New York City. The annual dinner will be held at the Waldorf-Astoria, November 17, on which occasion the John Fritz medal for 1911 will be presented to Sir William H. White, the famous British naval constructor, in recognition of his many achievements.

A conspicuous feature in the modern group of factory buildings now under way for the Hupp Motor Car Company, at Griffin street and the Michigan Central Belt Line, Detroit, Mich., is the large expense of Fenestra steel windows. These will be glazed with ribbed glass to give diffused daylight through all the working floors, without shadows, and no glare, doing away with any need for shades or awnings, even on the south and west.

Pittsburgh this week is celebrating the centennial of the opening of steam navigation on the Ohio River, the first ceremonies taking place on Monday and lasting for several days. One hundred years ago a small steamboat, the New Orleans, built by Nicholas Roosevelt, started down the Ohio, marking the opening of river navigation from Pittsburgh to Southern cities.

The Bossert Company, Utica, N. Y., has been steadily increasing its manufacturing facilities for nearly two years. It now has probably one of the most complete plants in the country for the large and economical production of sheet metal stampings, particularly heavy and difficult drawing and forming work from steel, copper, brass, aluminum and other ductile metals.

Personal

Franklin Alter, president of the American Tool Works Company, Cincinnati, Ohio, celebrated his 80th birthday October 28. He entertained a number of friends at dinner in his home at Avondale. In spite of his advanced age Mr. Alter is more active than many men 20 years younger.

David Van Alstyne, vice-president of the Allis-Chalmers Company, Milwaukee, Wis., in charge of the manufacturing department, has resigned, effective November 15. C. E. Search, formerly Mr. Van Alstyne's assistant, has been appointed works manager. Mr. Van Alstyne went to the Allis-Chalmers Company from the vice-presidency of the American Locomotive Company. He will engage in business in New York.

At the meeting for organization, following the recent annual meeting of the Republic Iron & Steel Company, the following were elected to the Executive Committee: James Campbell, John Lambert, John F. Harris, Grant B. Schley and John A. Topping. The officers of the company have been re-elected.

Charles S. Gingrich, of the Cincinnati Milling Machine Company, Cincinnati, addressed the Cleveland Engineering Society, Cleveland, Ohio, on the evening of October 24 on "Modern Machine Shop Milling Processes," illustrating continuous milling by the rotary process, continuous milling by the reciprocating process and gang milling.

Julian Kennedy, the well-known consulting engineer, Bessemer Building, Pittsburgh, who was quite ill at his summer home in Canada for some months, has so far recovered as to be able to attend to business again.

T. Frame Thomson, London, England, chairman of the Otis Steel Company, Ltd., is now in this country and will spend some time at Cleveland.

O. P. Stehn resigned as manager of the Cleveland office of Manning, Maxwell & Moore, November 1, to accept a position with the Hydraulic Pressed Steel Company, Cleveland.

H. N. Anderson, chief engineer of the Speedwell Motor Car Company, Dayton, Ohio, has tendered his resignation, to take effect December 1, intending to give his entire time to his new process of rolling the teeth in steel gear blanks while hot. A description of this process was published in *The Iron Age* of November 3, 1910.

Obituary

EDWARD WILLARD PECK, secretary-treasurer of the Co-operative Foundry Company, Rochester, N. Y., died October 20, of pneumonia, aged 66 years. A native of Rochester, Mr. Peck received his early education in the private schools of Rochester and New Haven. He had been associated with the Co-operative Foundry Company since its formation 44 years ago and held the office of secretary-treasurer for a number of years. He was an active member in the National Association of Stove Manufacturers and in the Stove Founders' National Defense Association. At the time of his death he was president of the Standard Sewer Pipe Company, president of the New York State Sewer Pipe Company, vice-president and a member of the executive committee of the Stromberg-Carlson Telephone Mfg. Company, a trustee of the Monroe County Savings Bank, a director of the Lincoln National Bank and a director of the Rochester Telephone Company.

WILLIAM H. KERR, superintendent of the Tonawanda Iron & Steel Company's furnaces, North Tonawanda, N. Y., since 1890, died at his home October 27 after a long illness, aged 63 years. He was born in Butler, Pa. Before entering the service of the Tonawanda Iron & Steel Company, he was employed by the Carnegie Steel Company at Pittsburgh.

The regular monthly meeting of the Pittsburgh Foundrymen's Association will be held in Engineers' Hall, Oliver Building, Pittsburgh, on the evening of November 6. It will be addressed by Prof. John J. Porter of the University of Cincinnati on "The Quality of Pig Iron, Its Independence of Chemical Composition and Its Relation to Methods of Manufacture."

British Wage Earners

Earnings and Hours of Work in the Iron and Steel Industry

Since 1906 the British Board of Trade has been preparing for publication the results of an inquiry into the wages and hours of labor prevailing in the principal industries in the United Kingdom, including agriculture. The results of this investigation, as far as iron and steel manufacturing, shipbuilding and the metal trades are concerned, have been recently made public. In 1906 there were approximately 1,500,000 persons employed in these and allied industries in Great Britain and the returns secured by the Board of Trade covered 744,557. The average weekly wage secured by these workers according to age groups was as follows:

Class of employees.	Number.	Average weekly wage.
Men	577,861	$7.84
Boys (under 18)	136,653	2.57
Women	20,922	2.96
Girls (under 18)	9,121	1.74

The average weekly earnings, the number of hours worked each week, and the average number of days' holiday granted per annum are shown in the following table for all employees in the principal branches of industry investigated:

Industry.	Number of employes.	Weekly earnings.	Hours per week.	Holidays per year.
Engineering and boilermaking	368,552	$6.29	53.1	13.4
Iron and steel	53,981	8.75	54.4	12.4
Light iron castings, etc.	12,333	5.97	53.8	11.5
Pig iron	13,995	8.10	55.2	7.3
Railroad car building	45,829	6.62	53.6	7.3
Shipbuilding	109,285	7.43	52.9	10.8
Tin plate	10,921	7.79	47.8	10.8

The average weekly wages of men workers for the different departments and occupations of the principal branches of iron and steel manufacturing is shown, as far as figures are available, in the statement below:

Industry.	Weekly earnings.
Iron puddling	$9.27
Steel making:	
Bessemer process	9.03
Open hearth	16.01
Crucible	6.64
Cogging and rolling	13.30
Forging	11.00
Tin plate manufacturing:	
Foremen	12.92
Furnacemen	10.83
Rollers	14.31
Shearers	14.39
Annealers	10.12
Tinmen	9.72
Assorters	11.91
Picklers	10.77
Engineering and boilermaking:	
Patternmakers	9.11
Joiners	8.40
Molders (iron and steel)	9.15
Smiths	10.45
Turners	9.74
Fitters, erecters and millwrights	9.64
Planers, borers, etc.	7.75
Platers (boiler shops)	12.06
Riveters and calkers	10.55

In all of the different branches of the industry concerned with the manufacture of iron and steel products there has been a large increase in average weekly earnings of employees in the past 20 years. In the manufacture of pig iron it has amounted to 30.5 per cent.; in tin plate mills to 25.7 per cent.; in engineering and boilermaking to 25.9 per cent., and in car building and repairing to 22.2 per cent. The increase in weekly earnings of employees in all industrial establishments related to the manufacture of iron and steel was 25.7 per cent.

A computation was also made of the annual earnings of employees by dividing the aggregate annual wages bill in a number of representative establishments by the average number of workmen employed. According to this method, the annual earnings of employees of establishments producing pig iron, reduced to United States money, was $384; of iron and steel mills $399; of tin plate mills $360; of engineering and boilermaking plants $336; of shipbuilding establishments $338; of car building and repairing plants $321, and of plants making light iron castings, etc. $287.

The Treadwell Engineering Company, Easton, Pa., has absorbed the Lebanon Steel Casting Company, Lebanon, Pa.

A Suit to Dissolve the Steel Corporation

The Government Brings Action Under the Sherman Act—Features of a Remarkable Petition—Steel Corporation Directors Act on the Hill Ore Lease and on Ore Freights

Events have culminated rapidly in the past week in the matters relating to the United States Steel Corporation, which for some time had been prominent in public attention. On Thursday afternoon, October 26, the Government filed a suit in the United States Circuit Court at Trenton, N. J., asking for the dissolution of the Steel Corporation on the ground that it was organized and is conducted in violation of the Sherman anti-trust act. At a meeting of the directors of the Steel Corporation held earlier on the same day resolutions were adopted providing for the surrender of the lease of the Great Northern iron ore lands and for reducing to 60 cents a ton the rate on iron ore over the two Minnesota roads of the Steel Corporation. On Friday afternoon, October 27, Chairman Gary made public a statement commenting upon the action of the Government in bringing the dissolution suit. In the matter following, these various developments of the week are taken up in the order of their occurrence.

To Cancel the Great Northern Lease

Action by the Steel Corporation Directors

At a meeting of the directors of the United States Steel Corporation held on Thursday, October 26, the following resolutions were adopted:

"That there be recommended to the board of directors of the Great Western Mining Company the surrender on January 1, 1915, of the lease between that company and the West Missabe Land Company, Ltd. and others dated January 2, 1907. Pursuant to the provisions of article 17 of the said lease.

"That there be recommended to the board of directors of the Duluth, Missabe & Northern Railroad Company reductions of freight rates on iron ore from points of the Mesaba iron range reached by the lines of that company, to Duluth, Minn., to amounts not exceeding 60c per gross ton, with the suggestion that all points upon the said range reached by the lines of the said company be included in one zone or district for the purpose of establishing freight rates upon iron ore over the line of the said company to Duluth.

"That there be recommended to the board of directors of the Duluth & Iron Range Railroad Company reduction of the freight rates on iron ore from points on the Vermilion and Mesaba iron ranges reached by the lines of that company to Duluth and Two Harbors, Minn., to amounts not exceeding 60c per gross ton, with the suggestion that all points upon the said ranges reached by the lines of the said company be included in one zone or district for the purpose of establishing freight rates upon iron ore over the lines of said company to Duluth and Two Harbors."

The above action was in pursuance of previous action of the Finance Committee of the Steel Corporation, of which announcement was made one week previous. The reduction in the Duluth, Missabe & Northern rate to Duluth is from 80 cents, or 25 per cent. On the Vermilion range, where all the shipping mines but the Section 30 belong to the Steel Corporation, the rate is now 90 cents from Tower to the Two Harbors docks and $1 to the same docks from Ely. From Mesaba range points the Duluth & Iron Range rate is 80 cents. The intent of the resolution quoted above is to give all Duluth & Iron Range points a 60-cent rate.

The Government's Petition

It Asks for a Decree of Dissolution—The Hill Ore Lease

The Government's petition for the dissolution of the United States Steel Corporation was filed in the Circuit Court at Trenton, N. J., October 26 by Assistant Attorney General John B. Vreeland of the New Jersey District, acting under the immediate direction of Attorney General Wickersham. Ex-Secretary of War Jacob McGavock Dickinson is associated with the Attorney General as special counsel to the Government. The individuals mentioned in the petition are J. Pierpont Morgan, John D. Rockefeller, Andrew Carnegie, Charles M. Schwab, George W. Perkins, E. H. Gary, John D. Rockefeller, Jr., Henry C. Frick, Charles Steele, James Gayley, William H. Moore, J. H. Moore, Edmund C. Converse, Percival Roberts, Jr., Daniel G. Reid, Norman B. Ream, P. A. B. Widener, William P. Palmer.

The principal corporate defendants are the following: United States Corporation, Carnegie Steel Company, Carnegie Company of New Jersey, Federal Steel Company, National Steel Company, American Steel & Wire Company of New Jersey, National Tube Company, Shelby Tube Company, American Tin Plate Company, American Sheet & Tin Plate Company, American Sheet Steel Company, American Steel Hoop Company, American Bridge Company, Lake Superior Consolidated Iron Mines, H. C. Frick Coke Company, Tennessee Coal, Iron & Railroad Company, Great Western Mining Company.

Additional defendants are the Union Steel Company, Clairton Steel Company and a number of mining and land companies in Minnesota, chiefly companies owning portions of the Great Northern ore lands or mines located on those lands. Among them are the West Mesaba Land Company, Ltd., the Wright Land Company, Ltd., the Wells Land Company, Ltd., and the Stone Land Company, Ltd. The trustees of the Hill lease are also mentioned. This indicates that special stress will be put upon the acquisition of the Hill lands. William P. Palmer is the only president of a subsidiary company mentioned as a defendant, a probable indication that the American Steel & Wire Company is singled out among subsidiary companies for attack as in restraint of trade.

Decrees the Court Is Asked to Make

The grounds on which the various allegations of violation of the Sherman act are made are set forth at great length, as will be referred to later; then in conclusion comes the Government prayer for relief, which is as follows:

In consideration whereof, and inasmuch as adequate remedy in the premises can only be obtained in a court of equity, the United States of America prays your Honors:

First—To order, adjudge and decree that the combinations and conspiracies and monopolizations of trade and commerce hereinbefore described are unlawful, and that all acts done or to be done to carry out the same, or any part thereof, are in violation of the act of Congress of July 2, 1890, entitled "An Act to Protect Trade and Commerce Against Unlawful Restraints and Monopolies."

Second—That the defendants, and each and every one of them, and the officers, directors, stockholders, and agents of the defendant corporations, and of each and every one of them, be perpetually enjoined from doing any act in pursuance of or for the purpose of carrying out the same.

Third—That the United States Steel Corporation, in and of itself, as well as each and all of the elements composing it, whether separate or individual, whether considered collectively or separately, be decreed to be illegal and in restraint of trade, and an attempt to monopolize and a monopolization within the first and second sections of said act of Congress of July 2, 1890, and that it be dissolved.

Fourth—That each and all of the said constituent or subordinate companies shown, as aforesaid, to have been combined in restraint of trade and commerce and in monopolization of trade or commerce

within the meaning of the Anti-Trust act, each in and of itself, as well as each and all the elements composing each, respectively, whether considered collectively or separately, be declared to be illegal, in restraint of trade, and an attempt to monopolize and a monopolization within the first and second sections of said act, and that each be dissolved.

Fifth—That the holding of stock by any one of the defendant corporations in another of the defendant corporations under the circumstances shown be declared illegal, and that each of them be enjoined from continuing to hold or own such shares and from exercising any right in connection therewith.

Sixth—That the said several defendant corporations shown as aforesaid to be constituents or subsidiaries of the United States Steel Corporation be enjoined and prohibited from declaring or paying any dividends to the said United States Steel Corporation or to any person or corporation for its use.

Seventh—That it be decreed that the several individual defendants combined each with other persons and corporations to restrain trade and commerce and to attempt to monopolize and in monopolizing within the first and second sections of said act, and that each of them be enjoined from continuing to carry out the purpose of any of the above-described combinations and conspiracies and attempts to restrain commerce and trade, or to monopolize any part of commerce and trade among the States and with foreign nations.

Eighth—That such orders and decrees be made in respect of the stock issued under the several combinations aforesaid as shall be in accordance with equity and good conscience, and that such disposition be made of the said various properties as shall effectuate the purposes of the said anti-Trust act.

Ninth—That the said lease entered into as aforesaid by the Great Northern interests and the Great Western Mining Company be decreed to be illegal, in restraint of trade and commerce, an attempt to monopolize and a monopolization within the first and second sections of said act, and that the same be now canceled.

Tenth—The United States also prays for such other and further relief as the nature of the case may require and the court may deem proper in the premises.

To the end, therefore, that the United States of America may obtain the relief to which it is justly entitled in the premises, may it please your Honors to grant to it writs of subpoena directed to the said defendants and each and every one of them, commanding them and each of them to appear herein and answer, but not under oath (answer under oath being hereby expressly waived), the allegations contained in the foregoing petition, and abide by and perform such order and decree as the court may make in the premises, and upon hearing hereof to permanently enjoin said defendants as hereinbefore prayed, and, pending a final hearing of this case cause a temporary restraining order to issue enjoining the defendants and each of them and each of their officers, agents, and servants as hereinbefore prayed.

Consolidations Preceding the Steel Corporation

The Government reviews in great detail the conditions in the steel trade before the consolidations of 1898-1900 and the formation of the Federal Steel Company, the Carnegie Company of New Jersey, the American Steel & Wire Company, the National Tube Company, the National Steel Company, the American Tin Plate Company, the American Steel Hoop Company, the American Sheet Steel Company and other corporations prior to the formation of the United States Steel Corporation itself in 1901. It also describes the corporation's acquisition of the Tennessee Coal, Iron & Railroad Company.

In dealing with all these consolidations the petition points out the profits of the underwriting syndicates. It shows that the underwriters of the Federal Steel Company got $5,680,000 preferred stock and $8,400,000 common stock in return for $4,800,000 cash and their services in organizing the concern.

THE SUBSIDIARIES ALLEGED TO BE ILLEGAL.

The petition then says: "The purpose and effect of such consolidation were a combination between said consolidated companies and the Federal Steel Company, their officers, agents, promoters, and underwriters in restraint of trade and commerce among the several States and with foreign nations, within the meaning of Section 1, and were an attempt by the said parties to monopolize and a monopolization of part of the trade or commerce among the several States and with foreign nations, within the meaning of Section 2 of the Anti-Trust act." This paragraph is substantially repeated with regard to each of the other consolidations as they occur. The Carnegie Company of New Jersey is taken up next and the list given of concerns consolidated under its ownership.

THE AMERICAN STEEL AND WIRE COMPANY.

In turn the American Steel & Wire Company is referred to as combining under one management and control all of the leading concerns engaged in the production in the United States of wire, wire nails and other wire products. The petition asserts that up to this consolidation these concerns had been in substantial competition with one another. One of these companies, the American Steel & Wire Company of Illinois, was itself a consolidation of six competitor companies. It is alleged that stockholders of the old Consolidated Steel & Wire Company received $490 in stock of the New Jersey concern for $100 of their old stock. "As a result of this consolidation the American Steel & Wire Company of New Jersey," the petition declares, "obtained an almost complete monopoly of barbed wire and of woven wire production and controlled approximately four-fifths of wire fencing and nails produced in the United States. The prices were greatly increased. The price of nails in 1901 was more than 200 per cent. of the price in 1897."

OTHER CONSTITUENTS.

The National Tube Company is spoken of as controlling, when it was organized, 90 per cent. of the iron and steel wrought tubing of the United States, its constituents having been competitors previously.

The National Steel Company is referred to as controlling 12 per cent. of the steel ingot production of the country. "At least $5,000,000 of the common stock" went for promotion.

The American Tin Plate Company was "a consolidation of 39 plants, with 279 mills, engaged in the tin plate industry in the United States. It issued $46,000,000 of capital stock. It acquired practically every tin plate concern in the United States, and secured thereby an almost complete monopoly of that branch of the industry. Ten million dollars of the common stock went to the organizers."

The American Steel Hoop Company comes next with a capital stock of $33,000,000, of which $5,000,000 went for promotion. The petition says that it "brought into combination under one control the leading concerns engaged in the production of cotton ties, steel bands, hoops and like products in the United States."

Then follows the American Sheet Steel Company, of which the Government says: "It took over the principal manufacturers of sheet steel of all kinds." A large amount of its capital stock went for promotion.

Competition After the First Consolidations.

The petition traces the conditions leading up to the formation of the United States Steel Corporation. There was, it states, active competition between the Carnegie Steel Company, the Federal Steel Company and the National Steel Company. These three were also in competition with some of the consolidated companies dealing with the lighter finished products.

The success achieved and the power gained by the consolidations aforesaid stimulated these companies and those controlling them severally to larger enterprise and more ambitious plans, involving further elimination of competition and restraint of trade and commerce. * * * The leaders in the steel industry feared the breaking down of the restraints upon trade and the overthrow of the partial or complete monopolies which they had established. The Carnegie Company and the Federal Company saw the danger of their former customers becoming their rivals. Both companies took steps looking to the manufacture of finished products.

The petition cites the manner in which the Carnegie Company precipitated a crisis by the announcement of its intention to erect an immense tube plant at Conneaut, Ohio, and says:

If each of these actual and prospective competitors had worked out its own destiny in trade, commerce, and production, unobstructed by combinations or agreements entered into for the purpose of restraining competition and trade and commerce among the States, and between the States and foreign countries, new plants would have been established, and said trade and commerce would have developed under different conditions and free from restraints which, as will be shown, were imposed with the purpose and effect of unduly restraining such trade and commerce and monopolizing in part such trade and commerce. An opportunity was offered through further consolidation and restriction of trade and commerce, for enormous profits as a reward for effecting the combination, and as a result of the flotation of inflated stocks.

The Steel Corporation's Capitalization

Referring to the capitalization of the Steel Corporation the petition says:

The capitalization was many million of dollars, not less than $600,000,000, in excess of the value of the properties thus taken over. It was vastly in excess of the amount upon which those properties under normal conditions could earn a fair return. The earnings of the corporation were not commensurate with its actual

capital, nor were they entirely the legitimate fruits of the earning capacity of those properties separately controlled, however well administered, but were to a very large extent, approximately one-half, the result brought about by the power exerted over trade and commerce by such a vast combination of capital, the restraint imposed upon trade and commerce, the suppression of competition, the influence upon the control of prices, and the many direct and indirect advantages derived from the co-operation of so many men of influence in trade and commerce, who, formerly acting in rivalry, were by the combination drawn together in a common interest. Consumers and the public at large were through the power created and exerted by such a vast combination compelled to pay an unlawful tribute of many millions of dollars annually to the corporations.

The new inflated capitalization of the corporation exceeded the old inflated capitalization of the constituent concerns plus the new cash capital provided and sundry stocks by $415,481,732, or by over 45 per cent. The main prospect for maintaining earnings on the many millions given for promotion and issued in excess of valuation was the power in the business achieved by combination, the potency of vast aggregation of capital, the affiliations brought about with powerful banking and transportation companies and the direct and indirect control of trade that thereby ensued. This was a fictitious basis resting on an unlawful combination.

The petition says that the underwriting syndicates received $64,998,768 par value of preferred and $64,998,837 par value of common stock of the Steel Corporation for its services. Stress is laid also on the statement that in order to get rid of Andrew Carnegie as a competitor, J. P. Morgan and associates paid not less than $492,006,160 for a property which a short time before J. P. Morgan refused to take at $160,000,000 under the Frick option.

Growth of the Corporation

Of the acquisitions by the Steel Corporation after its formation the petition says, referring first to the American Bridge Company: "By this acquisition of this large monopolistic combination, which was a large consumer of steel product for the sale of which there was competition, the corporation added greatly to its strength and power to restrain competition and trade and commerce."

The second of these acquisitions was the Lake Superior Consolidated Iron Mine, which "combined a large number of important mining companies and properties which previously were competitive." The petition says that the stock of this company was heavily watered, but the corporation paid 135 of preferred and 135 of its common stock for each $100 of this watered stock. This company had from 300,000,000 to 400,000,000 tons of ore, and owned the Duluth, Missabe & Northern Railway, which runs from Duluth into the Mesaba range, and operated at a low cost with very high earning. The petition says:

"It was a very important acquisition to the corporation. The control of this road with that of the Duluth & Iron Range Railroad (acquired in the original consolidation) gave the corporation a very effective control of ore transportation in the Minnesota ore regions, not only with respect to its own production, but also to that of many of its competitors."

The Bessemer Steamship Company was the third acquisition of the corporation. Then came the Shelby Steel Tube Company, which was a consolidation of several seamless tube companies. This combination produced about 90 per cent. of the entire output of the country. "Through this acquisition the corporation got rid of a competitor of its constituent company, the National Tube Company, and established its supremacy in the seamless tube branch of the steel industry."

The corporation also took over a one-sixth interest in the Oliver Iron Mining Company and the Pittsburgh Steamship Company, the other five-sixths of each concern being owned by the Carnegie Company.

The Union Steel Company was the next acquisition of the Steel Corporation. According to the petition, it was an important competitor of the corporation. It was formed of the Union Steel Company of Pennsylvania and the Sharon Steel Company of Pennsylvania. The Sharon Company owned valuable property, and its operations were such as brought it into sharp competition with the corporation. The Union Steel Company, after its combination with the Sharon Company, had a pig iron capacity of about 750,000 tons yearly and an annual steel ingot capacity of about 850,000 tons. The petition says that the price paid for these properties was in excess of their actual value, but "the corporation desired to eliminate the competition of influential interests back of the Union concern, particularly that of H. C. Frick."

The petition then describes the acquisition of the Troy Steel Products Company and the Clairton Steel Company. In taking the Clairton Company, says the petition, the corporation got rid of a competitor and its monopolistic control of ore and coal was increased.

The Great Northern Ore Lease

Referring to the lease of the Great Northern ore properties in Minnesota in 1906 the petition says: "By this transaction the corporation desired to prevent this ore either from being mined and sold to independent competitors, or from being utilized to build up a new and dangerous competitor in the iron and steel business. The practical effect was to forestall competition and to greatly increase the corporation's control of the ore resources of the country. The royalty agreed to be paid was unprecedentedly large, thus showing the extent to which the corporation was willing to go to prevent this ore falling into the hands of competitors. By this acquisition the corporation strengthened its dominating position. * * * The petitioner has been informed by the corporation that its Finance Committee on October 17, 1911, unanimously decided to cancel said lease. However, under the terms of said lease, no such cancellation can take effect before January 1, 1915, and there is no limitation upon the amount of ore that can in the meantime be taken out by the corporation."

The Tennessee Company Purchase

At great length the petition goes into the circumstances of the acquirement of control of the Tennessee Coal, Iron & Railroad Company in the panic of 1907. It says:

The properties of this company were located mainly in Alabama and Tennessee. Owing to the character of its coal and iron deposits, their location, and that of limestone, with reference to each other and to furnaces and transportation, the Tennessee Company could manufacture pig iron cheaper than it could be made in any other part of the United States. On account of its vast holdings of coal and iron properties, the steady growth of the manufacturing interests of the South, the fact that the known commercially available coal and iron deposits of the United States had been almost entirely acquired by manufacturing companies looking to their development, the gradual overlapping of the zones of competition, and its control by a strong and aggressive syndicate of capitalists, it was a strong, probable future competitor of the corporation. Most of the rails in the United States had been made out of Bessemer ores. On account of accidents attributed to inherent weakness in such rails a demand arose for an open-hearth rail, and for such process the ores owned by the Tennessee Company were available.

In 1907 a sensation was created in the steel rail market by E. H. Harriman, who controlled a large railroad mileage, ordering from the Tennessee Company 157,500 tons of open-hearth steel rails at $1 more per ton than the price of Bessemer rails. This at once put that company into a position of an actual competitor of the corporation and of a possible competitor that could not be ignored, of great potentiality.

The corporation was not slow to discern the situation. James Gayley, first vice-president of the corporation, having acquainted himself with the properties of the Tennessee Company, had already recommended to Mr. Frick, who then was a director of the corporation, that it acquire the properties of the Tennessee Company. This was about six months before the purchase was made. A syndicate which purchased, at $110 per share, 118,500 of the total 225,000 shares of the Tennessee Company, acquired the control for the purpose of development and operation. Subsequently a syndicate composed partly of the original members purchased 50,000 additional shares at $120 or $130 per share, thus putting 168,500 shares under syndicate control.

After these purchases the company expended $7,000,000 in betterments and additions, and was preparing to spend $3,000,000 more. It was the purpose of the syndicate to bring the whole plant up to moderate standards and to increase the capacity and conditions warranted. The company had rails booked for 1908 delivery of about 350,000 tons.

Then follows a recital of the financial difficulties of Moore & Schley and the familiar history of the Trust Company of America episode, the outcome of which was the purchase of $30,374,825 of Tennessee Company stock by the corporation:

The corporation exchanged for the stock its own bonds on a basis which paid par in cash for stock which Gary a few days before said was not worth more than sixty cents on the dollar.

While as to much of the situation the facts are in doubt, it is certain that the corporation availed itself of the embarrassment of Moore & Schley at a most critical period, and the hammering of the Tennessee stock and the threatening of a general financial calamity, to acquire the control of a competitor, taking on a formidable aspect.

By this purchase the corporation acquired 447,423 acres of mineral lands in Tennessee, Georgia, and Alabama, containing approxi-

mately 3,000,000,000 tons of merchantable ore and 1,200,000,000 tons of coal, of which over one-third is coking coal. The Tennessee properties embraced eighteen developed and active iron ore mines and twenty-three coal mines, sixteen blast furnaces, the ownership of several land companies holding extensive tracts of land, and the Birmingham Southern Railroad Company, a terminal property of great value, connecting the various mines and plants in the Birmingham district with all the diverging trunk lines. The capacity of the Tennessee Company's blast furnaces a year was about 1,000,000 tons and its steel ingot capacity was about 500,000 tons. The possibilities of the Tennessee properties and the development of its raw material are immense, and greatly increase the control by the corporation over the total available ore supply of the country.

The corporation thus greatly strengthened its control of the iron ore supply of the country and its predominating position in the iron and steel trades of the South, eliminated a competitor, and unlawfully acquired a power which is a menace to the welfare of the country, and should be destroyed.

Referring to President Roosevelt's acquiescence in the Tennessee purchase, the petition says that the facts in the matter were not fully disclosed to him by Messrs. Gary and Frick, who went to Washington to lay the matter before him, and that their statement to him that but little benefit would come to the corporation through the purchase "was a misleading one."

Control of Fuel, Ore and Transportation

In section 7 the petition discusses the position attained by the corporation through ownership or control of coal, coke, iron ore and transportation. It says:

The profits derived by the corporation from its transportation properties, chiefly railroad lines, represent a large part of its earnings, and these are largely derived from the rates and tolls imposed by the corporation upon other steel manufacturers who have to have their ore transported in the Minnesota ore region by the Duluth & Iron Range and the Duluth & Missabe railroads. By the power thus acquired a burden is imposed upon competitors and a restraint is thereby exercised upon trade and commerce between the States. Since 1904 the Duluth & Iron Range Railroad Company has paid dividends upon the capital which have averaged more than 100 per cent. per annum. For the same period those of the Duluth, Missabe & Northern Railway Company have been from 102 per cent. to 140 per cent. per annum upon the capital stock. Petitioner has recently received information of the purpose of the corporation to reduce the rates of these roads 10 or 20 cents per ton.

Through the ownership of the Elgin, Joliet & Eastern Railway, and more particularly through the Bessemer & Lake Erie, the corporation has a further important advantage over most of its competitors with respect to transportation. Its minor railroad properties, particularly the Union Railroad of Pittsburgh, the Chicago, Lake Shore & Eastern Railway, the Connellsville & Monongahela Railway and that of the Tennessee company, are important factors in its transportation system and give it an advantage over its competitors.

As to coal and coke, the petition says that the control of the Tennessee company has added vastly to the strength of the corporation by the locking up of raw material and preventing its acquisition by possible competitors. It cites the fact that Judge Gary testified before the Ways and Means Committee of the House in December, 1908, "that the corporation pretty nearly controlled the ultimate ore supply of the country."

"The control of such a large proportion of available ore," the petition goes on, "and of so much of the transportation of the ore from the ore fields gave the corporation the power to largely control the iron and steel market and force its plans and wishes on its competitors, restrain competition, control market prices, restrain trade and commerce between the States and with foreign countries, and this it has since 1901 continuously done, in contravention of the Anti-Trust act."

Extensions and Changes Since 1901

Section 8 of the petition deals with the extensions made by the corporation out of its earnings since its organization and says that the investment of its earnings has been from $400,000,000 to $450,000,000, thus further increasing its power, influence and dominancy.

Then follows, in section 9, a long and detailed discussion of the changes that have occurred in the properties of various constituent companies. This section includes a table showing the amounts of total outstanding capitalization of the various subsidiary companies of the Steel Corporation, together with the amount of such capitalization owned by the corporation. A similar table is given for each of the constituent companies of each of the subsidiary concerns of the Steel Corporation. The intent of this section is to show in detail every concern owned or controlled by the Steel Corporation.

Section 10 of the petition puts into technical legal language the charge of the government as to the various consolidations of the constituent companies of the Steel Corporation. Its concluding paragraph says:

All the business of the corporation and its controlled companies is conducted without competition among them, and as a part of a general plan and combination by which they have partly destroyed competition in trade and commerce among the States and with foreign nations, and have, by their strength, acquired a great influence over competitors whereby they are brought into harmonious action with the corporation in restricting competition and in restraining such trade and commerce.

Pools and Interlacing Directorates

Recent consolidations in the steel business are briefly reviewed and these pools and agreements are considered, including the Plate Association, the Structural Steel Association, the steel rail combination, the wire rope combination, the rubber-covered wire combination, the horseshoe manufacturers' combination, the underground power cable combination, the weatherproof and magnet wire combination, the lead-encased rubber cables combination, the bare-copper wire combination and others. Then the question of interlocking directorates is dealt with and the petition says:

In addition to pools, a more euphonious, refined, but none the less effective, method came into vogue. Conditions had so changed as to make the way for this new procedure easy. When the iron and steel products were made by independent concerns, which, in their desire for business, brought about from time to time sharp competition, the only method of restraint was an agreement or pool, and this was not always effective, for they frequently played false to such combinations. Under the policy of the corporation there grew up a community of interest and a power to influence action to a common purpose never exceeded in the commercial history of the world. Here came into existence a system of interlacing of directorates which embraced almost the entire commercial and financial powers of the country. Appended as exhibit C is a list of the officers and directors of the corporations and also a list of the various companies with which they severally were connected, as of the year 1910. This shows the status substantially as it has been for preceding years and as it is at the present time. It has been a constantly growing system since the creation of the corporation, and therefore the personnel and alliances vary for the several years since 1901, but the system and the power achieved by it have been practically the same from 1901 down to the present time.

Co-operation with Competitors

Finally the petition discusses at length combinations other than pools and agreements, and referring evidently to independent steel companies, though without designating them as such, it says:

Under the auspices of the corporation these interests, naturally competitive but harmonized by this network of correlations and overshadowed and dominated by the power of the corporation arising from its pre-eminence in the business, and the irresistible strength of its alliances, come together from time to time, find out the views of the corporation in respect of prices and output and all that hitherto was affected by pools and formal agreements, reach a common understanding and purpose and proceed to carry them out. It is not here alleged that merely assembling and mutually exchanging information and declaration of purpose amounts to an agreement or combination in restraint of trade. These meetings and their results have gone further. What they actually accomplished shows the great and dangerous power achieved by the corporation through unlawful combination exercised over the trade and commerce of the country. The concerted action taken has prevented fluctuations in prices and competition.

At the meetings have been represented of the iron and steel trade in the United States fully 90 per cent. of the total. In no line of business in the world at any time has there been such a large percentage of those engaged in a business as the percentage of those in this country who at these meetings go along day by day, hand in hand, pursuing the same course.

THE GARY DINNER OF JANUARY, 1911.

At the time of one of these meetings, held in New York January 11, 1911, there was not in the country a demand for more than 50 per cent of the total producing capacity in the lines of those represented, and there was not enough business to go around, and there was no possible way of protecting themselves from competition except by coming to an understanding that each would be satisfied with a portion of the business, which was understood by all, and this understanding was carried out and no one of them competed for the recognized business of the others.

The meetings accomplished more than did the old pools and agreements, which were frequently broken. It was understood and

agreed that they were bound to protect one another; that to carry out this purpose their honor was at stake, and that the obligation binding on them was even dearer than life itself, and that no one of them should act or fail to act except with a distinct and clear understanding that his honor was involved, and that this was more binding on him than any written or verbal contract.

EXCHANGE OF INFORMATION.

When bidden by the chief executive of the corporation they came at any time, from any distance, ready, willing and anxious to turn over to him and to his friends all that was in their minds and in their hearts concerning their own business. When they met the chief executive of the corporation admonished them that no one of them should forget the high moral obligation he was under toward his neighbor, and that it was of the highest importance at that particular time that every one of them should have a keen and abiding sense of the personal obligation which he had toward all the others, and to make no mistake of running the risk of trespassing within the domain of the right of his neighbor who had given his confidence and trust, and who was willing at all times to put within the knowledge, and therefore more or less under the charge and control, of the others the very direction of his affairs.

By these meetings and interchange of information and understandings each became in honor bound not to get the trade of the other, and each by the concerted action acquired participation in the direction of the affairs of the other.

The main purpose of the meeting of January 11, 1911, was the question of maintaining or changing the prices of the commodities in which they dealt. A majority came to a consensus which was accepted and followed by all.

At these meetings they not only exchanged information, but advocated control of prices, and reached a common understanding which was followed, under solemn admonition that they were bound by an obligation more estimable than life.

MAINTENANCE OF PRICES.

These meetings brought about the maintenance of prices. It was understood by them that they were traveling together, and that they were going to stand together. They understood and acted upon the understanding that a statement as to what one would do as to prices or output was a promise and a pledge upon honor to the others.

At the meeting of January 11, 1911, and at the other meetings there was a general expression of opinion that prices should be maintained, and in pursuance of this understanding and agreement they were maintained. When an understanding was reached individual declarations were made of intention to follow the movement. It was recognized that they follow the policy laid out for them by the head of the corporation. This meeting of January 11, 1911, was attended by about eighty representatives of iron and steel concerns, being a large majority in number and output of such concerns in the United States. They understood that the purpose was to consider the prices of iron and steel, that the consensus of opinion was that the prices should not be lowered, but that they should be maintained, and that by virtue of what occurred they were in honor bound to each other to maintain them. In fact, they, in pursuance of this action, did maintain them.

By the aforesaid pools, agreements, meetings and acts of corporation, the said several companies and individual defendants, in addition to the several unlawful agreements and combinations by which all of the companies and properties aforesaid were brought under one control, have combined or conspired in restraint of trade and commerce among the several States and with foreign nations within the meaning of Section 1, and to monopolize a part of the trade or commerce among the several States and with foreign nations within the meaning of Section 1, and to monopolize a part of the trade or commerce among the several States and with foreign nations within the meaning of Section 2 of the anti-trust act.

Chairman Gary's Statement

Below is the statement given out by Chairman Gary of the United States Steel Corporation on Friday, October 27, the day following the filing of the Government's petition:

"I think it would be improper for me at this time to make any comments concerning the suit which has been brought by the Government against the United States Steel Corporation, except to say I regret exceedingly that the Department of Justice felt called upon to institute proceedings. If any harm results, it will fall upon the stockholders and employees, aggregating a very large number, and any loss to them must be deplored. It is a time for every one to keep cool, with a disposition to patiently await results, knowing that in the end justice will be done to all interests.

"I believe a disclosure of all the facts applicable to the allegations contained in the Government's bill of complaint as a ground for relief will show that the suit ought to be decided in favor of the corporation on the merits; and that the following facts will be established:

"1. That in the organization of the United States Steel Corporation those in charge had no intention of creating a monopoly or of restraining trade.

"2. That the corporation never has had, or attempted to exercise, a monopoly or to restrain trade.

"3. That the conduct of the affairs of the corporation has clearly and positively negatived any effort or intention to violate any provision of the Sherman law.

"4. That the existence of the corporation has been of benefit and not of injury to its employees, its customers, its competitors and the general public.

"5. That no misrepresentation was made to the President relative to the Tennessee Coal & Iron properties, and that the motive of those connected with the purchase was to prevent threatened general financial disaster which would have adversely affected the corporation as well as others."

Dodge Iron-Center Wood-Rim Pulley Test

On May 13 the Dodge Mfg. Company, Mishawaka, Ind., through its Boston branch, received an order from the William Slater Mills, Jewett City, Conn, for two iron-center wood-rim pulleys with a proviso calling for a rim speed test of one hour at 8000 ft. per min. The proposition was accepted.

The specifications for one pulley called for 100-in. diameter, 22-in. crown face, 5⅞-in. approximate bore, and the other for 74-in. diameter, 22-in. crown face, 4 15/16-in. approximate bore, the rims of solid maple, the hubs of solid iron, to transmit 340 hp. at 6700 ft. per min. rim speed with 21-in. belt. To be absolutely on the safe side, the Slater Mills asked for a sworn statement of the test.

On June 10 the pulleys were ready for business. The one-hour test was made in the wood pulley shops under the direction of the superintendent, W. J. Chesbro, and the general superintendent, E. H. Ahara, gave instructions just before the start to operate the pulleys at a speed in excess of specifications. The story of the result is told in the following: The 100-in. diameter pulley, minimum speed, 374 r.p.m.; average speed, 375 r.p.m; average rim travel for the hour, 9817 ft. per min. The 74-in. pulley, minimum speed, 510 r.p.m.; average speed, 510 r.p.m.; average rim travel for the hour, 9880 ft. per min. The speeds of the shaft were noted at frequent intervals during the test to secure an accurate average of the speed under which the pulleys were operated. A letter from F. D. Balloa, superintendent of the Slater Mills, dated October 11, says: "The Dodge iron-center wood-rim pulleys have thus far run in a very satisfactory manner."

Several years ago a customer ordered an iron-center wood-rim pulley, 46½-in. diameter, 16-in. crown face and 4-in. bore under a test of 9000 ft. per minute. He got 10,000, and a companion pulley built for further test was run at the terrific speed of 29,200 ft., or a little over 5½ miles per min.

American Iron and Steel Institute Directors

A special meeting of the American Iron and Steel Institute was held at the offices, 30 Church street, New York, October 26, at which most of the members were represented by proxies. An amendment to the constitution increasing the number of directors from 15 to 21 was adopted, and an election was held resulting in the choice of the following:

J. G. Butler, Jr., Youngstown, Ohio.

Charles S. Price, president Cambria Steel Company, Johnstown, Pa.

Robert Hobson, general manager Steel Company of Canada, Hamilton, Ont.

Frank S. Witherbee, Witherbee, Sherman & Co., Inc., New York,

F. W. Roebling, secretary and treasurer John A. Roebling's Sons Company, Trenton, N. J.

Isaac M. Scott, president La Belle Iron Works, Steubenville, Ohio.

Percival Roberts, Philadelphia, a director of the United States Steel Corporation, was elected a member of the institute.

Pittsburgh and Vicinity Industrial Notes

The department of chemistry of the School of Applied Industries of the Carnegie Technical Schools, Pittsburgh, is offering a course in chemistry and metallurgy for foundrymen and others interested in allied branches of work. The first lecture was given October 30. The tuition for the course is $16 per year.

At the organization meeting of the board of directors of the Crucible Steel Company of America held in Pittsburgh, October 27, the following were elected for the ensuing year: Executive Committee, Herbert Du Puy, C. C. Ramsey, James H. Park, George E. Shaw, H. S. A. Stewart, John A. Sutton, H. D. W. English; Herbert Du Puy, chairman; C. C. Ramsey, president; John A. Sutton, first vice-president; J. W. Dougherty, second vice-president; O. H. Wharton, third vice-president; G. W. Sargent, fourth vice-president; Charles W. Rowlands, secretary; George A. Turville, treasurer.

The Cambria Steel Company, Johnstown, Pa., has appointed W. Beverly Robinson & Co., Montreal, Can., its agents for Canada for the sale of rails, billets, cars, wire products, etc. The Canadian firm maintains large warehouses for the carrying of stocks.

Hiram Swank's Sons, Johnstown, Pa., recently completed a new stock house 50 x 150 ft. and three new kilns at its plant at Irvona, Clearfield County, Pa., which makes seven there. This plant is practically new, having only recently been finished, and manufactures fire brick, standard shapes, nozzles and runner brick. The firm also operates a plant at Johnstown, Pa., where its office is located.

The Westinghouse Electric & Mfg. Company has received an order from the Central Pennsylvania Traction Company, Harrisburg, Pa., for six double equipments of No. 101 C motors and K-36-F control; Morgantown & Dunkard Valley Railroad Company, Morgantown, W. Va., quadruple, direct current, No. 306 interpole motors equipped with K-35-G control; Detroit United Railways Company, Detroit, Mich, four quadruple interpole motors equipped with multiple unit control; Cleveland Railways Company, Cleveland, Ohio, 20 quadruple, direct current, interpole motors equipped with K-35-G control.

The Connellsville Iron Works, Connellsville, Pa., of which W. E. Kelly is general manager, is building two separator tanks each weighing 3 tons for the West Penn Power Company, Green Junction, Pa., on which delivery will be made this week. The Connellsville Iron Works specializes in steel mine cars, mine equipments and plate work, including boilers and boiler repairs. Its equipment department contains five larries on which prompt shipments can be made. It recently completed an addition to its plant and installed additional equipment and is in excellent shape to handle work in its line.

The Fairbanks Company is now occupying its new warehouse at Liberty avenue and Twenty-ninth street, Pittsburgh, where it carries in stock a large line of machine tools, gas engines, Oneida split-steel pulleys, shafting hangers, belting, trucks, barrows, valves, steam and water specialties, factory, mill and mine supplies and scales.

The Heppenstall Forge & Knife Company, Pittsburgh, is making some additions to its plant and has taken out a permit for the erection of a steel building to cost $25,000. Some new machinery for the manufacture of forgings, shafts and shear knives will be installed.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has secured a contract from the Isthmian Canal Commission for 20,000 ft. of 2 to 12-in. pipe.

George J. Hagan, 401 Peoples' Bank Building, Pittsburgh, has been appointed agent in the Pittsburgh district for the American Stoker Company, New York City.

The plant of the Shenango Iron & Steel Company at Wheatland, Pa., recently bought by Max Solomon, scrap iron dealer, Oliver Building, Pittsburgh, will be dismantled and the machinery scrapped. At one time this was one of the leading industries in the Shenango Valley.

The United Engineering & Foundry Company, Farmers' Bank Building, Pittsburgh, has received a contract from the Pittsburgh-Crucible Steel Company, Midland, Pa., for a 40-in. blooming mill, tables and manipulator. This blooming mill will be similar to the ones built by the company for the Republic Iron & Steel Company, Youngstown, Ohio, and for the American Rolling Mill Company, Middletown, Ohio, an illustrated description of the latter mill having appeared in *The Iron Age* of August 31. It will have the new modern type of housing, including convenience of adjustment and the rigid character of the top roll carrying connections and its extreme adaptability for changing and repairing. The manipulator will be of the Wellman-Kennedy type, arranged with turn-over fingers and manipulating slabs on both sides of the mill.

The Cleveland, Painesville & Eastern Railroad Company, Willoughby, Ohio, is now engaged in enlarging its plant and changing the operating voltage from 13,200 to 22,000. In making this change it has ordered two 1500 kw. and two 50 kw. 6600 volt turbo-generator units from the Westinghouse Machine Company, Pittsburgh. Its previous equipment consisted of compound steam engines and electric generators, but, appreciating the advantages of turbine drive, it has selected Westinghouse-Parsons turbo units for the additional capacity which it is installing. The system is three-phase, 25-cycle and the distance covered is approximately 38 miles.

Morgantown Seeks Additional Industries

The Morgantown Board of Trade, with headquarters in the Price Building, Morgantown, W. Va., which has a membership of over 500, is carrying on a campaign to secure new manufacturing enterprises. A fund of $312,000 has so far been raised for manufacturers who locate there and this amount will be considerably increased before the campaign closes. The town offers manufacturing sites with cheap oil, coal and gas, good water, plenty of labor, good railroad facilities, etc. It is reached by the Baltimore & Ohio Railroad and Morgantown & Kingwood Railroad, and an extension is being built to it by the Pittsburgh & Lake Erie from Martin, Pa. It also has good interurban railroad connections. The town now has fifteen industries, but the Board of Trade is desirous of securing diversified lines of manufacture. In the vicinity are 120,000 acres of the Pittsburgh coal seam and 75,000 acres of the Freeport seam, with slack water to Pittsburgh and excellent river shipping facilities. The work of interesting manufacturers is in the hands of Dr. I. C. White, president of the Board of Trade and State Geologist, and Glenn Hunter, secretary of the board. A descriptive folder has been issued setting forth the advantages of the locality.

Magnalium, a remarkable alloy of aluminum with a small proportion of magnesium, manufactured in Germany, is handled by G. A. Crayen & Co., 81 New street, New York City, Morris R. Machol being in charge of the metal department. The extreme lightness and density of magnalium, with its high thermal conductivity, make it well adapted for aeroplane engine cylinders. On account of the toughness and strength of the metal, it is being used, not only for cylinders, but also for crank cases, water pumps, intake manifolds, and the various other things connected with the manufacture of an engine which could admit of the use of castings of any kind. The use of this metal for cylinders makes a considerable reduction in the weight of the average aeroplane engine, because as a general rule the cylinders are a large proportion of the weight of the motor.

Hickman, Williams & Co., dealers in pig iron, coke, etc., announce that, owing to the fact that they have lately centralized their bookkeeping and accounting departments at their Cincinnati office, and as J. O. Henshaw, one of their partners, is making his headquarters now in Philadelphia instead of New York, they decided to discontinue their New York office November 1. The territory handled by their New York office will now be handled from their office in the Pennsylvania Building, Philadelphia, Pa., as headquarters. The selling force in the New York territory will remain the same. The Boston office will still attend to business in the territory covered from that point in the past.

The Organizer of Men in Management

Pointed Observations Recently Made by John Calder

The genius of the organizer of men as distinguished from the mere systematizer of things and the attitude that shop management is an art rather than a science—in short, special emphasis on the human factor in directing the industrial establishment—are two conspicuous points brought out in an address on the economic administration of industrial establishments made before a joint meeting of the Engineering Club and the Altoona Railroad Club at Altoona, Pa., October 25, by John Calder, manager of the Remington Typewriter Works, Ilion, N. Y. The address was introduced with figures to show the considerable length of time which transpires before a manufacturing company turns over its capital once, or, in other words, the large percentage which the capitalization of a business has to the value of the product turned out. This condition of affairs is advanced as one argument why there is need for greater efficiency in shop management. The speaker dwelt at some length with the problems of the Remington typewriter works, outlining the organization, submitting a chart of the successive division of responsibility and explaining briefly the duties of each department and their relations. An insight into the scheme of operations may be had from the organization chart here reproduced, but space limitations make it necessary to draw on the paper only from the instructive observations covering the importance of organization and the systematizer. A printed copy of the paper, which perhaps may be obtained from one of the clubs or from Mr. Calder, would give explanation of the organization chart.

At the outset, Mr. Calder emphasizes, we must reckon with the fact that the organization, not the system, is the primary consideration. This is not the order of precedence prescribed by some professional systematizers, but any other is a mistake. Every business worthy of the name must be provided with an organization, and no matter what particular system may be followed it cannot attain economic distinction if it is not effectively organized.

The primary object of organization is to bring brainy men together for work and action. A wise organization seeks and encourages men of ambition. It believes that the ambitious man is not necessarily dangerous. It knows that success demands an aggregation of strong individualities, free to contribute their quota of wisdom, but loyally subordinating their individual preferences to the general policy, once declared. In order that its work may be well done and its action strong and forcible the organization must move forward as a harmonious unit. No amount of clever scheming alone will secure this. Herein lies the task and the genius of the organizer of men as distinguished from the mere systematizer of things. His work is much easier to talk about than to carry out, but it needs brief mention here.

Emerson says "Every great business is but the lengthened shadow of one man," and he is right. The modern administrator of industrial establishments is a manager of men rather than of things, and the human factor touches his business on all sides. An organization cannot go into commission. It must have a strong, resourceful leader and a carefully selected, well-trained loyal and enthusiastic staff. This will only come through intimate contact with a man, not a mere machine or inanimate system. The cold-bloodedness of some of the modern schemes for exploiting the higher human energies is not only repelling—it is a fatal defect.

The Systematizer

Any system, however attractive and justifiable in some of its features, is, like the plant itself, worth no more than it can earn. No manufacturer is in business as a subject of experiment which may not point the way but merely warn others from following. All money and worry expended on system beyond the earning point is wasted. An admitted experiment of measured duration and conclusive nature is one thing, but a shop revolution covering years of transition experiences is irretrievable and usually unsupportable. In concerns in which system is an expensive hobby and not an economical tool, all kinds of extravagancies will creep in and will be justified by some philosophy which ignores common sense.

One of the claims brought before proprietors by some of the external practitioners of system is that it will not only render the efficiency of their business self-perpetuating—a most desirable end if attainable—but that it will also enable them to become, to a large extent, independent of their managers and higher executives. This is a somewhat mischievous doctrine. No army of clerks, mechanically following planning instructions however perfect, can take the place of the full use and recognition of able engineering administrators and shop assistants under any conceivable works system.

It is the belief of the writer that the best type of shop system is evolved, not from the outside, but in the shop itself through careful analysis of its special conditions and requirements by the responsible administrator thoroughly in sympathy with and experienced in advanced practice. A busy and prosperous administration can sometimes be helped by system advice from the outside. It should never be controlled by it.

Shop Management an Art

Shop management is an art rather than a science. It has to deal with too many unknown quantities and variables either to aspire to scientific rank or to adopt a fixed creed. Few individual businesses can afford the interference and expense involved in carrying out effectively the extensive scientific program. The installation of the whole machinery of scientific management has been very seldom attempted. Nevertheless, there is plenty of scope for more systematic analysis and regulation of shop processes and expenditures. The business world, and engineers in particular, owe much at present, and will owe more, to the ability and devotion with which the author of "Scientific Management" (Frederick W. Taylor) has elaborated and advocated his particular combination of things old and new.

There are several rules in regard to office and shop routine which the writer would recommend all managements to observe, irrespective of the class of work done. Have a well-considered system of doing things, definite and businesslike in all departments, designed for your own case. Make the connection between departments clear to all employees by the use of a chart (such as that shown). Have as little system and as few forms as possible. Make them a means, not an end. Do not treat the system as a fetich. It is a good servant but a bad master. Prune and pare your system until it gives the utmost economy and dispatch. Do not fail to note closely what your system costs, and if it is really paying its way. Very few experts can answer that question. With many it is purely a matter of faith.

In many cases with us the "trade" is still the economic unit instead of the "task," and this is particularly so in the metal manufacturing and the building industries, not only so, but labor has shown no disposition to improve the "trades," many of which are notoriously wasteful of time and effect. There can be little doubt in these days, when the high cost of living is a live topic, that economic necessity, if not inclination, will finally drive us to take up in all seriousness the conservation and intensive application of human energies in every department of activity, distributive as well as productive, and that new avenues of usefulness will open up for the production engineer.

It may be emphasized here that the underlying practical motive of the system is not indiscriminate speeding at the expense of the workers, but the securing by co-operation of the economies obtainable through either anticipating or locating and removing all wasted time and ineffective or unnecessary effort and expense, whether clerical, manual or mechanical. It is directed toward enabling employee and capitalist alike, under the most favorable conditions, to make the most of the opportunities of the working day, and in so doing a very large part of the usual burden is removed from the shoulders of the employee and placed upon the organization.

Organization of the Remington Typewriter Works

The organization is indicated on the chart by the numbered and grouped functions which the various assistants control. The figures below each division on the chart indicate the total number of employees engaged in that section and afford by comparison some idea of the relation under the system of direct labor upon the product to the various preliminary and operating services found necessary.

The foremen are not functionalized out of existence as proposed in some systems and made to feel that they count for little in the general scheme of things. Relieved of all clerical duties and, because of the motion studies and straight piece work based upon them, of practically all policing duties, the foremen are left free to manage their own shops and to make the most of—if possible to suggest improvements upon—the equipment and instructions given them. Under these conditions they prove to be the most valuable employees on the pay roll and the most fruitful in good suggestions. Busy foremen are not able to carry out with the necessary detail and thoroughness the preliminary rate and method tests required by the system. If these were left to the shops, progress would be much slower, but they are keen critics of the results when presented for application and not seldom are able to "go one better."

As a result of the organization and the system followed a very compact industrial unit is obtained occupying less than 300,000 sq. ft. of floor area with its manufacturing operations and covering with its buildings and yards a rectangular plot of land only 1000 ft. long by 250 ft. wide. There is no waste or unused space anywhere within the various buildings or yards and the time occupied in mere handling or transport of work in process is cut down to a minimum owing to the ordered sequence of the operations, their close proximity and the rapid flow of the stock.

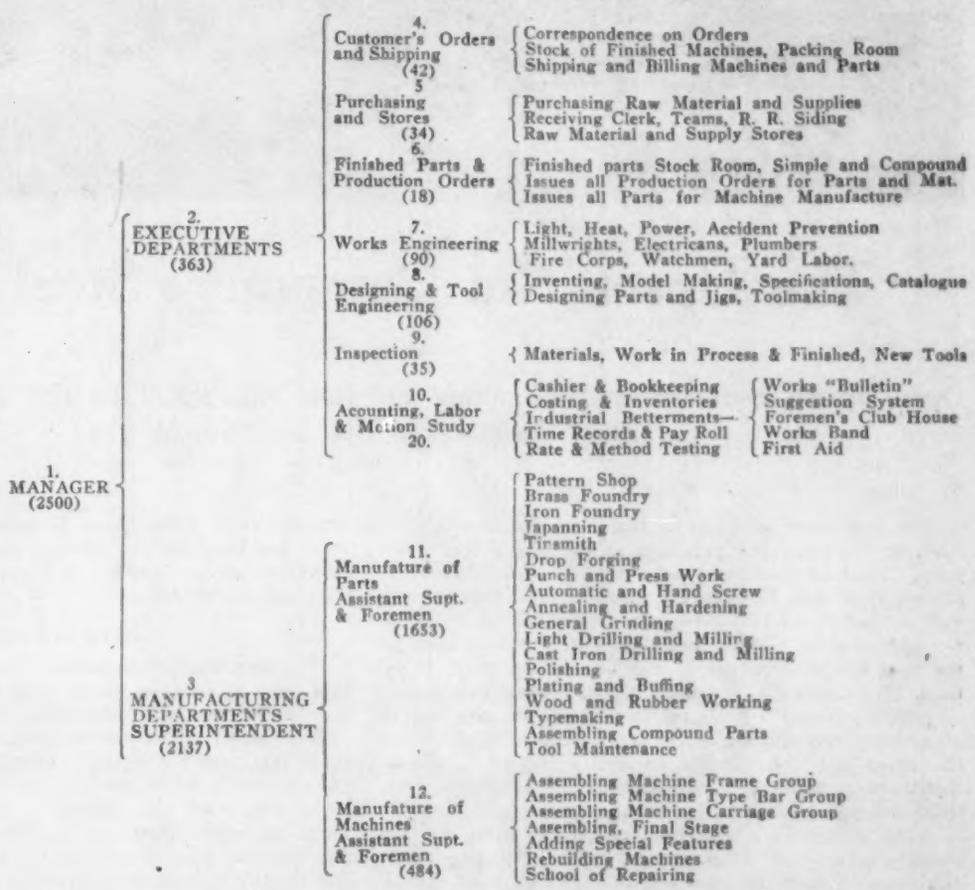
The buildings contain 1600 machine tools operated by mechanical power and 60 operated by hand labor, besides a large quantity of finely made and costly jigs, tools and fixtures and other labor-saving equipment. Many of the machines have been specially designed and constructed at the works The greater portion, however, are standard machine tools with slight adaptations for repetition operation by straight piece work under studied conditions which enable them to be used on an intensive scale not attempted in ordinary engineering. The automatic screw machines, for instance, 160 in number, are all run on a piece work system under close inspection, and the ordinary, somewhat indifferent day operator of a group of machines has been transformed into a busy and vigilant opponent of idle spindles.

A monthly periodical edited by the manager is issued to the foremen and assistants with news likely to interest and encourage them, with judicious criticism or appreciation of departmental performances and with full acknowledgment and a detailed list of all the "good suggestions" adopted during the previous month and the names of the contributing foremen. Much rivalry is aroused, and each issue contains 50 to 150 accepted suggestions of considerable value. In advancing a foreman his record in this respect is considered in addition to executive ability.

A suggestion system separate from that of the foremen is conducted for employees, and a prize of not less than $20 in gold is awarded for each accepted suggestion or group of suggestions. The ordinary employees are not nearly so fruitful in suggestions of value as the foremen, but the door for them is kept wide open and all necessary privacy for this purpose is afforded.

Among other industrial betterments arising out of an atmosphere of good feeling are a library and a hospital, the gifts respectively of C. W. Seamans and H. H. Benedict, the founders of the Remington typewriter business.

Organization of Remington Typewriter Works, Ilion, N. Y.

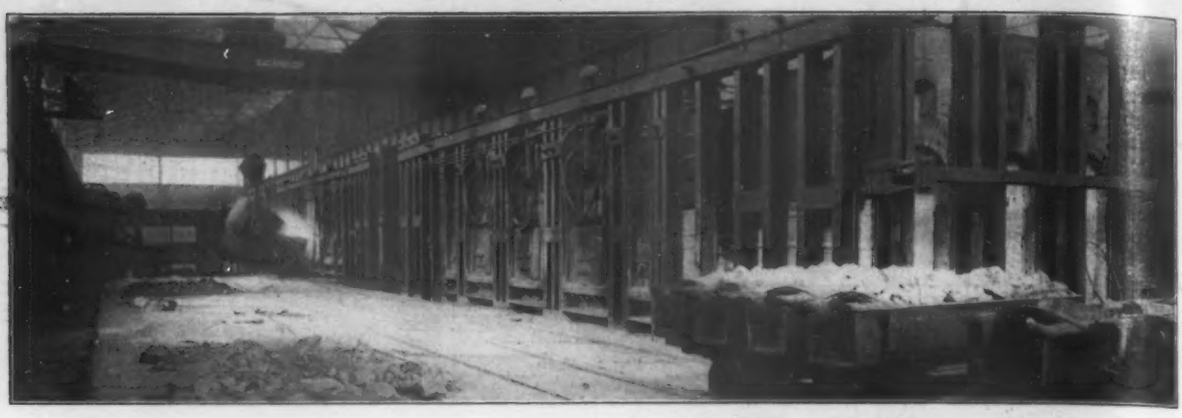

1. MANAGER (2500)
2. EXECUTIVE DEPARTMENTS (363)
3 MANUFACTURING DEPARTMENTS SUPERINTENDENT (2137)
4. Customer's Orders and Shipping (42)
Correspondence on Orders
Stock of Finished Machines, Packing Room
Shipping and Billing Machines and Parts
5 Purchasing and Stores (34)
Purchasing Raw Material and Supplies
Receiving Clerk, Teams, R. R. Siding
Raw Material and Supply Stores
6. Finished Parts & Production Orders (18)
Finished parts Stock Room, Simple and Compound
Issues all Production Orders for Parts and Mat.
Issues all Parts for Machine Manufacture
7. Works Engineering (90)
Light, Heat, Power, Accident Prevention
Millwrights, Electricans, Plumbers
Fire Corps, Watchmen, Yard Labor.
8. Designing & Tool Engineering (106)
Inventing, Model Making, Specifications, Catalogue
Designing Parts and Jigs, Toolmaking
9. Inspection (35)
Materials, Work in Process & Finished, New Tools
10. Acounting, Labor & Motion Study 20.
Cashier & Bookkeeping
Costing & Inventories
Industrial Betterments—
Time Records & Pay Roll
Rate & Method Testing
Works "Bulletin"
Suggestion System
Foremen's Club House
Works Band
First Aid
11. Manufature of Parts Assistant Supt. & Foremen (1653)
Pattern Shop
Brass Foundry
Iron Foundry
Japanning
Tinsmith
Drop Forging
Punch and Press Work
Automatic and Hand Screw
Annealing and Hardening
General Grinding
Light Drilling and Milling
Cast Iron Drilling and Milling
Polishing
Plating and Buffing
Wood and Rubber Working
Typemaking
Assembling Compound Parts
Tool Maintenance
12. Manufature of Machines Assistant Supt. & Foremen (484)
Assembling Machine Frame Group
Assembling Machine Type Bar Group
Assembling Machine Carriage Group
Assembling, Final Stage
Adding Special Features
Rebuilding Machines
School of Repairing

A well-equipped clubhouse and recreation park, honor badges for long and efficient service, a works band, a baseball league and a field day are some of the other social institutions. The policy of the corporation has been merely to provide such facilities as are not available from public enterprise in a small community and not within the means of the employees.

Unique Advertising Device Made of Toncan Metal

A huge bottle, made of sheet steel, bearing the label of a well-known headache remedy, tops the Emerson Building, one of the tallest structures of Baltimore, Md. From the sides of the bottle blaze the rays from 554 incandescent lights, formed into letters 10 ft. in hight and 6 ft. in width. The bottle itself is 70 ft. in hight and 20 ft. 7 in. in diameter. This unique advertisement required 365 days for construction, and although it contains more than 30 tons of massive metal it is so cleverly constructed and so perfectly balanced that it is easily caused to revolve at the rate of one revolution every 30 seconds by a motor of only three horsepower.

One of the problems confronting Williams & Shock, who engineered the contract, was the selection of a material capable of withstanding long exposure to all climatic conditions and of proved durability. At first ¼ in. copper was considered, but later Toncan metal of 14 and 16 gauge galvanized was chosen by the architects in preference to other materials. The rust-resisting and anti-corrosive features of Toncan metal especially adapted it for this purpose. This material was supplied by the Kahl-Holt Company, Baltimore, and the metal work was erected by Vaile & Young, metal workers of that city. Toncan metal sheets are manufactured by the Stark Rolling Mill Company, Canton, Ohio.



The Upson Nut Company's Steel Plant

Open Hearth Furnaces and Blooming and Bar Mills Built to Fill the Gap Between Blast Furnace and Bolt and Nut Works

For a number of years it had been the ambition of Andrew S. Upson, late president of the Upson Nut Company, Cleveland, Ohio, to build a steel plant that would be a connecting link between the blast furnace and the bolt and nut works of that company. When his expectations were about to be realized, less than a week before some of the open-hearth furnaces of the new works were to be fired, Mr. Upson died on April 2 last, leaving as a monument to his energy a finely equipped plant, one in which, in a comparatively limited space, ore is received directly on the docks and through the various processes of manufacture is transformed into billets and merchant bars, bolts and nuts and allied products.

Some difficulties had to be overcome in laying out the plant, because of the limitations of the building site, which was hemmed in by railroad tracks. Instead of having an abundance of new land, as has been the case with so many steel works built in the past decade, the engineers had to make their plans to fit the site. The layout provides ample room for the various departments, but practically every foot of the ground was utilized. The plant is located in the heart of Cleveland, on the east side of the Cuyahoga River, a short distance above the Superior avenue viaduct, the steel works lying between the blast furnace, which is on the bank of the river, and the bolt and nut works. With the river on the west, the plant is surrounded on the other sides by railroad tracks, the Erie being on the south and the Big Four on the north and east. Ore brought from Lake Superior mines is unloaded directly from the boats to the storage yard. The blast furnace, which is one of the oldest in Cleveland, has a daily capacity of about 200 tons.

General Arrangement

The new steel plant includes four open-hearth furnaces that show an average output of 65 tons each per heat, a 34-in. blooming mill and a finishing mill. It has a capacity of 12,000 tons of ingots per month and a finishing-mill capacity of 6000 tons per month. About 50 per cent. of the steel made is consumed in the bolt and nut works, the remainder being placed on the market in the form of billets and bars. Interesting features of construction grow out of the fact that the plant is laid out on two levels, the contour of the ground making this arrangement practical and desirable. The open-hearth casting floor and the ingot-stripping yard are on one level, 20 ft. above the river level. Fifteen feet higher is the upper level, on which are the scrap yard, the open-hearth charging floor, the floor of the pit-furnace building, and the blooming and finishing mills. This arrangement permits of taking material from the scrap yard to the charging floor of the open-hearth building on the same level, while steel ingots in molds leave the same building on another yard level. A more convenient provision for handling scrap to the open-hearth furnaces could scarcely be devised. An interior view of the open-hearth building is given in Fig. 1, while Fig. 2 shows the

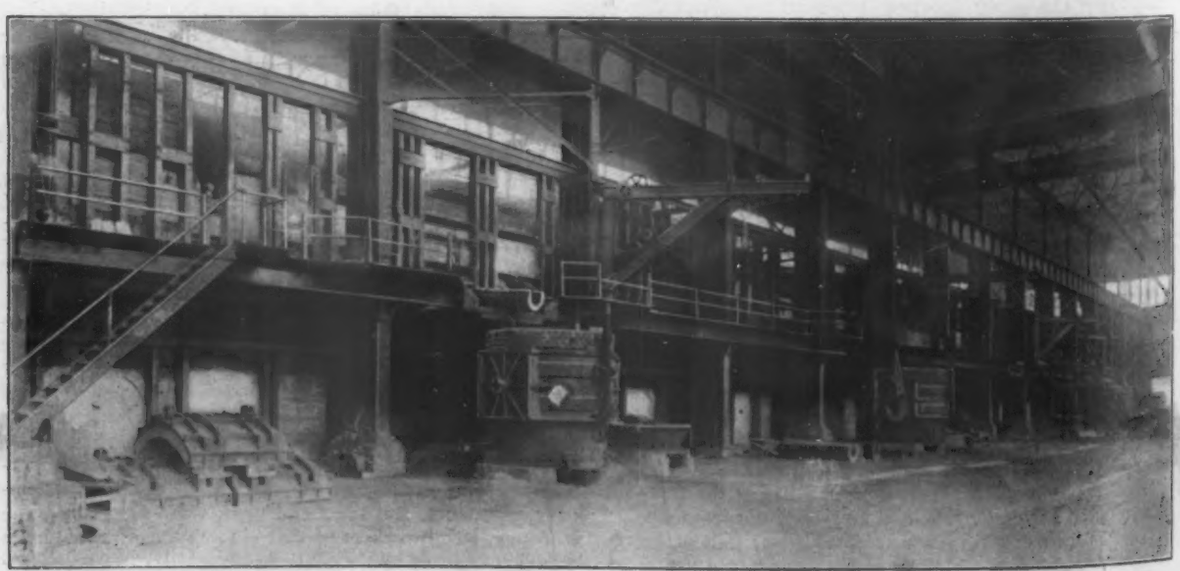


Fig. 1.—View at Point B, Fig. 2, of Pouring Side of Open Hearth Furnaces.

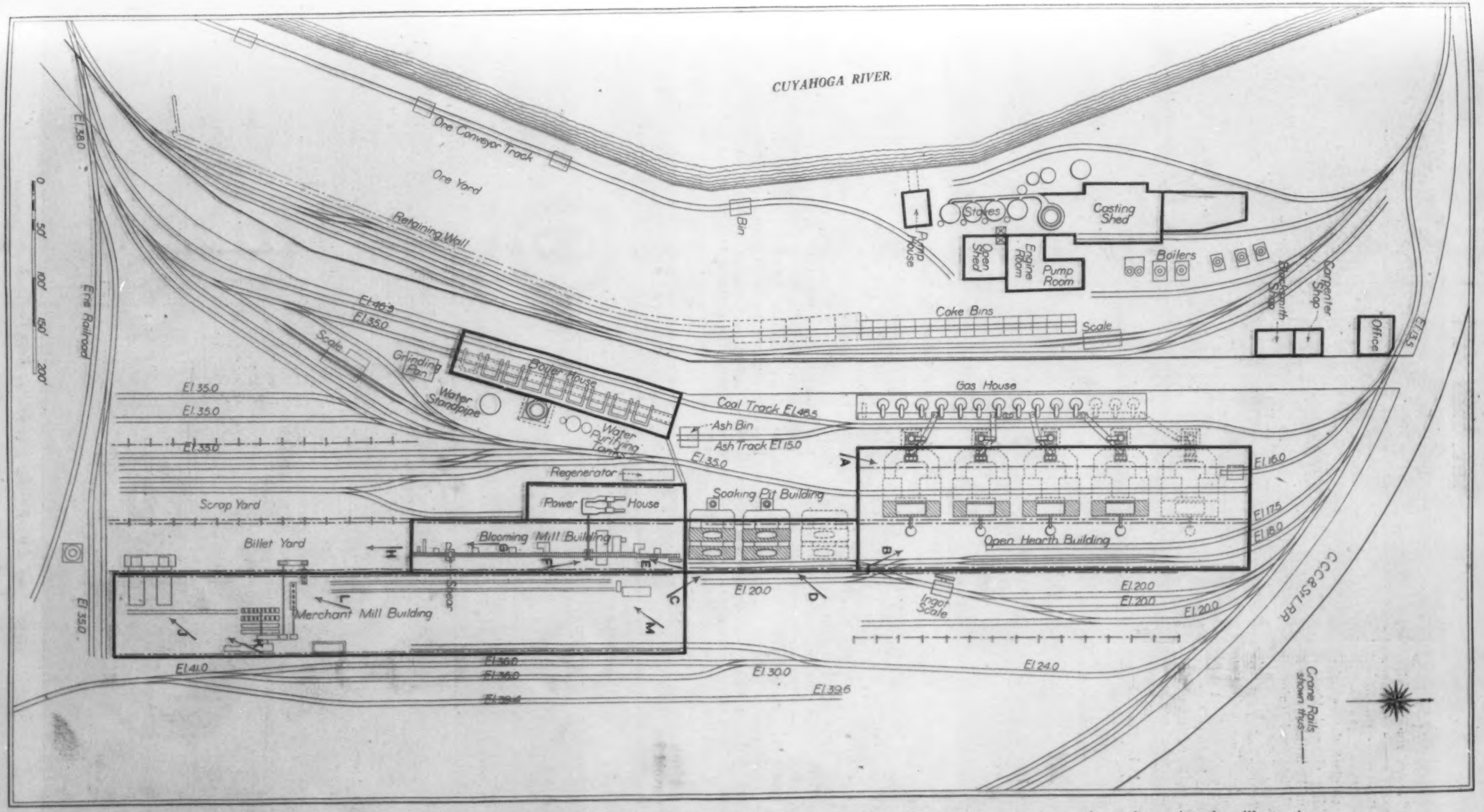


Fig. 2.—General Arrangement of the Blast Furnace and Steel Works of the Upson Nut Company. The reference letters apply to views shown in other illustrations.

general arrangement of the plant. There is a continuous runway with a 50-ft. crane span extending from the pouring side of the open-hearth plant through the soaking pit and blooming-mill buildings and the billet yard (alongside the finishing mill), a distance of 1286 ft. For handling material on cars throughout the plant and adjacent yards 16,810 ft. of standard-gauge tracks are provided. The plant was designed by and built under the direction of E. H. Martin, who is now manager of the steel department of the Upson Nut Company.

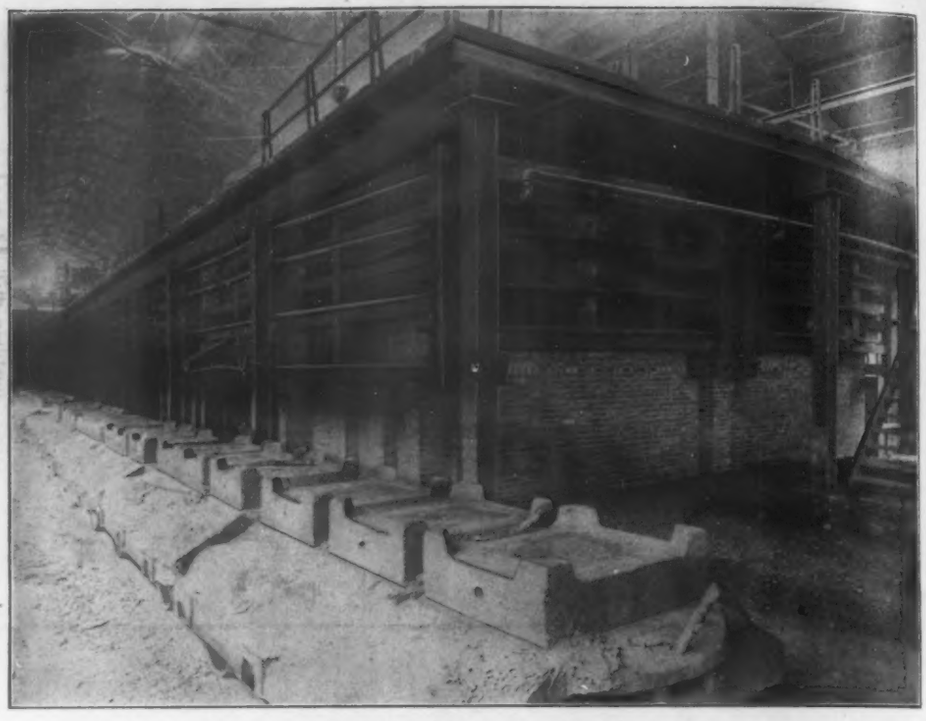


Fig. 4.—View of Soaking Pits from Point D, Fig. 2.

Open Hearth Furnaces

The open-hearth building is 408 ft. long and 130 ft. wide. Foundations are in for another furnace in addition to the four now in operation. The charging-floor bay is 59 ft. wide and the pouring floor 50 ft. wide. The furnaces are spaced at 72 ft. centers. The dimensions inside posts and side walls are 32 x 14 ft. The furnaces are equipped with the Knox water-cooled welded steel frames and doors, there being three charging doors and one small door at each end. The doors are hydraulically operated. The fuel is natural gas, but the plant is equipped for the use of producer gas should the natural gas supply run low. The gas valves are of the Schild reversing type, and the ordinary Siemens type of air valves is used, both made by the S. R. Smythe Company, Pittsburgh. This company built the open-hearth furnaces, the soaking pits and the reheating furnaces in the finishing mill.

To avoid interference with the crane on the charging side the gas mains, instead of being placed overhead, connect with the furnaces from beneath the charging floor. There being but one blast furnace, no mixer has been provided, though the advantage of an intermediate reservoir is recognized, and ultimately one may be built. A locomotive hauls the hot metal from the blast furnace in ladles of 40 tons capacity to the charging floor, where it is handled by a 40-ton ladle crane built by the Morgan Engineering Company, Alliance, Ohio. The hot metal is poured from the ladle into a pouring trough, through which it flows into the furnace. All of the crane equipment throughout the entire plant was furnished by the Morgan Engineering Company, with the exception of one small crane. The charging machine was also built by the Morgan Company.

The pouring floor is spanned by a 125-ton ladle crane with a 20-ton auxiliary. Each furnace is served by a 5-ton electrically operated jib crane, hung from the adjoining column. The pouring ladles have a capacity of 75 tons. A special feature in connection with the open-hearth furnaces is the arrangement for the removal of slag. The

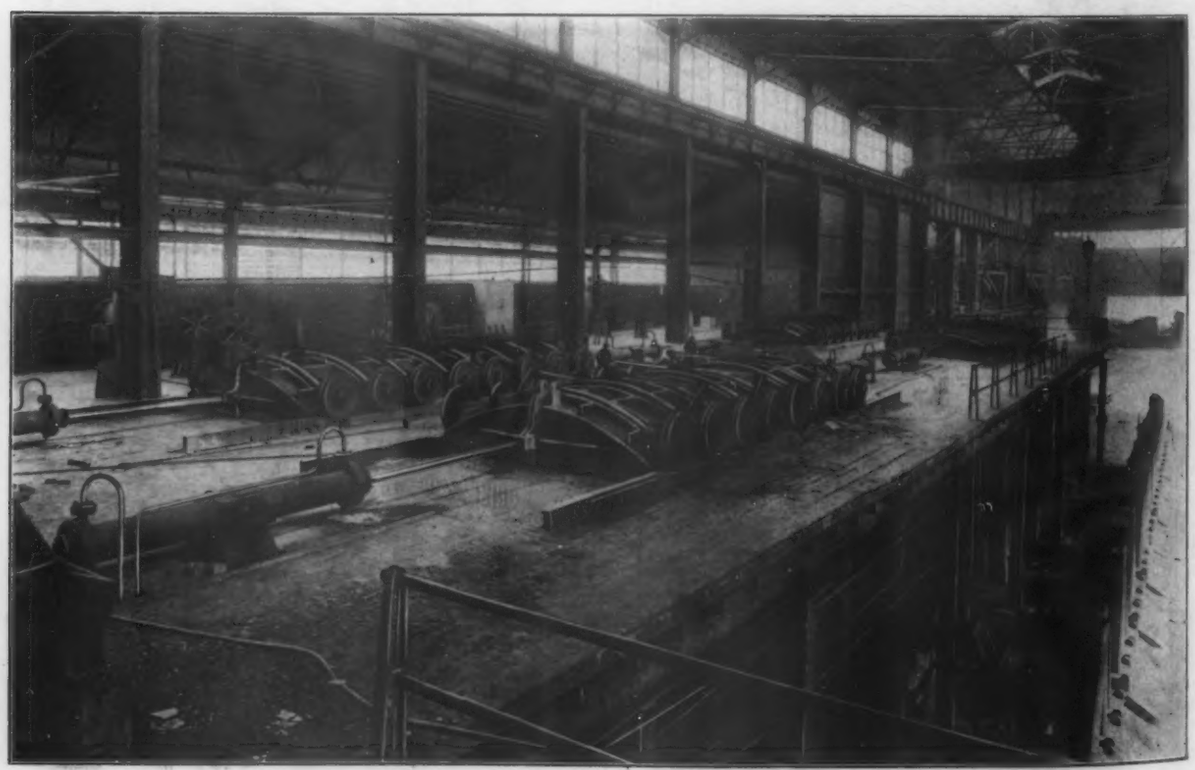


Fig. 3.—Top of Soaking Pits from Point C, Fig. 2.

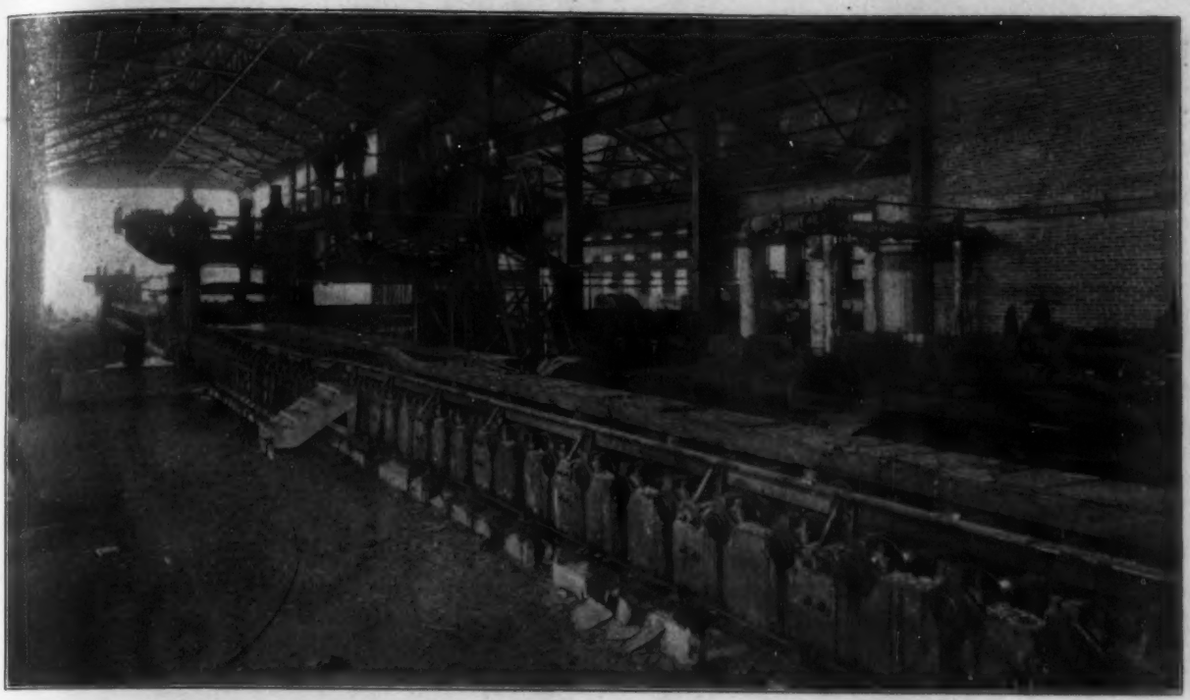


Fig. 5.—View from Point E, Fig. 2, of Approach to Blooming Mill.

overflow from the ladles runs through a spout into a Weimer slag pot at the side. It is also arranged that the primary slag from the furnaces can run into the slag pot if desired to tap off. The slag pots are lifted into Weimer cars and taken to the slag pile outside, where they are handled by a 10-ton crane. Here the slag is crushed and a portion of it is sent back to the blast furnace, while the remainder is thrown on the dump.

The Scrap Yard

The scrap yard, which is conveniently located with reference to the charging floor and on the same level, is 437 ft. long and 80 ft. wide. It is served by a 10-ton crane. A magnet is used for unloading scrap from the cars and for picking up material from the stock pile for the charging boxes. Three other magnets are used in different parts of the works. Three of the magnets were furnished by the Electric Controller & Mfg. Company, Cleveland, and one by the Cutler-Hammer Clutch Company, Milwaukee, Wis.

Gas Producers

Adjoining and running parallel to the open-hearth building on the west side is the gas house, 300 ft. long and 30 ft. wide. This is equipped with 11 Hughes mechanical gas producers, built by the Wellman-Seaver-Morgan Com-

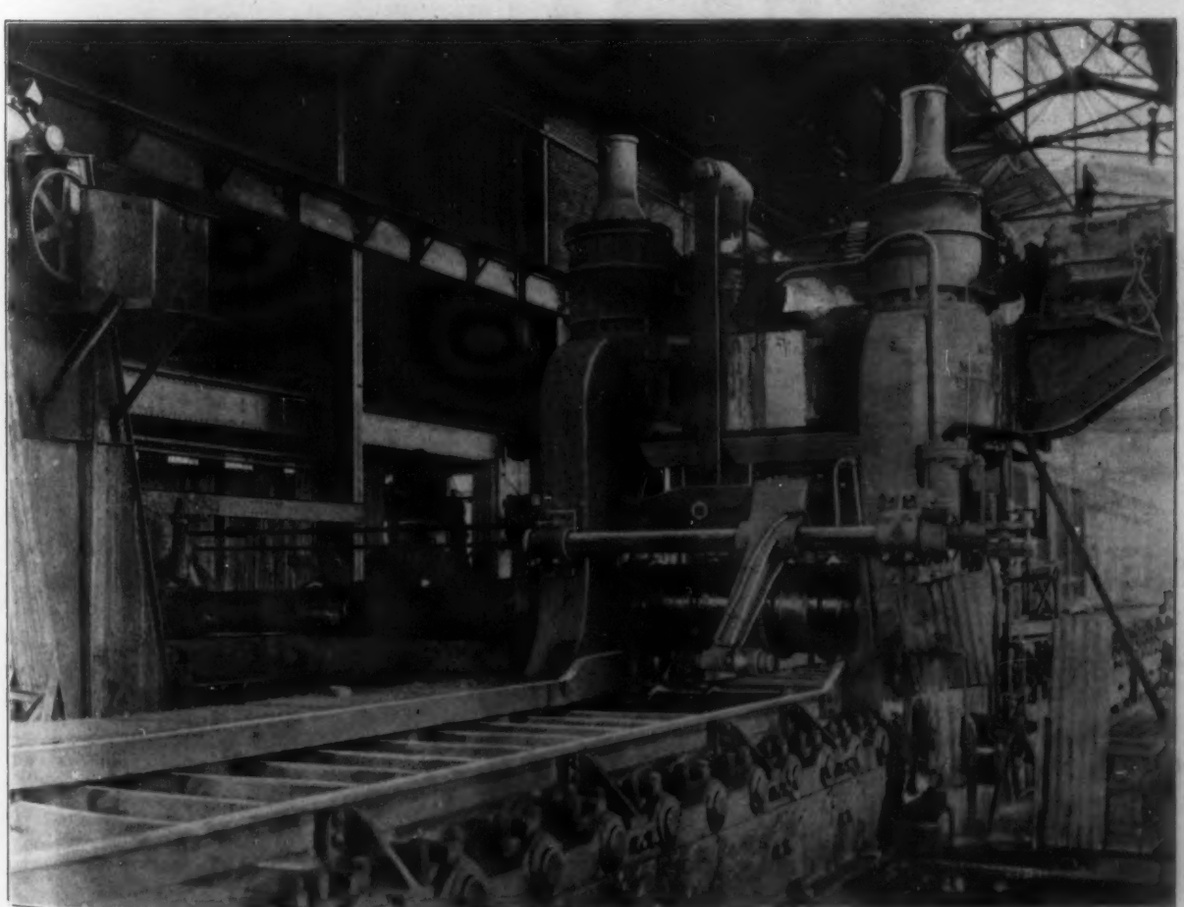


Fig. 6.—View from Point F, Fig. 2, of Blooming Mill, Showing Heat Number Stamper.

pany, Cleveland. Eight of the producers are for the open-hearth plant, two for each furnace, and three are for the soaking-pit furnaces. Foundations are in for three additional producers.

Soaking Pit Building

The ingots are stripped in a yard adjoining the casting floor, under a 100-ton stripping crane, and from there they are taken to the soaking-pit building. This is 180 ft. long and 53 ft. wide. In addition to the four pit furnaces room is provided for a fifth and sixth furnace, to be built when needed. These furnaces are 20 x 7 ft. and each has a capacity of 22 17½ x 19-in. ingots. The doors are so arranged that only one can be open at a time. They are operated by hydraulic cylinders. The Schild gas valve and the modified Siemens air valve are used for controlling the supply of gas and air in the pit heating furnaces. While the pits are fired with natural gas, they are arranged to be fired with producer gas generated by three Hughes mechanical gas producers. A special feature of the soaking pits is that their tops are on the upper level, while the regenerators are all in the open on the lower level. This plan of erection permits the tapping of cinder from side spouts as well as from the bottom of the pits. It also affords better ventilation and makes the pits easier to get at. The above-ground construction of the soaking pits is shown in Figs. 3 and 4. The ingots are charged into the pits and drawn by a 4-motor, 15-ton crane.

The Blooming Mill

The blooming-mill building, which opens directly off the soaking-pit building, as shown in Fig. 5, is 176 ft. long and 53 ft. wide. The blooming mill, Fig. 6, is a 34-in. two-high mill, driven by a 46 x 60-in. direct-connected reversing Mesta engine of 500 hp. The rolls are 29 in. diameter and 75 in. long between collars. Exhaust steam is taken from the engine through a Rateau generator into a mixed-pressure turbine to generate electrical power. The mill tables are motor driven. In general practice the mill takes a 17½ x 19-in. ingot 6 ft. long and rolls it down to a 4 x 4-in. billet. The billets pass to a runout table, which carries them to a Mesta shear, Fig. 7, with a capacity of 10 x 10-in. hot metal.

An interesting feature of the blooming mill is a mechanical device for stamping the heat numbers on the ingots as they leave the rolls. This is shown in Fig. 6. The general practice is to stamp billets by hand, although the blooming mill of one Eastern steel plant has an attachment for a similar purpose. The stamping device consists of a shaft attached to the housings of the mill, on which an arm oscillates, a stamp being set in the revolving head

Fig. 8.—Billet Conveyor from Point H, Fig. 2.

of the arm. The arm is operated by a hydraulic cylinder. When the ingot starts through the rolls on the last pass the arm is brought down into the position shown in the illustration, and the head containing the stamp revolves on the ingot, as it passes out on the runout table, under a hydraulic pressure of 500 lb. The heat number is stamped on the metal every 10 in. A duplicate rotating head is provided so that a new number can be quickly substituted when the heat is changed. The arm can be moved back and forth on the shaft by means of a chain and lever attachment, so that the stamp will operate over any pass. The device was designed by L. G. Schmidt, who until recently was connected with the Upson Company.

Billet Conveyor

The billets, coming from the shear table of the blooming mill, are discharged on a billet conveyor, Fig. 8, which was designed and installed by the C. O. Bartlett & Snow Company. The billets are carried up and discharged in

Fig. 7.—View from Point G, Fig. 2, of Billet Shear, Conveyors and Billet Yard.

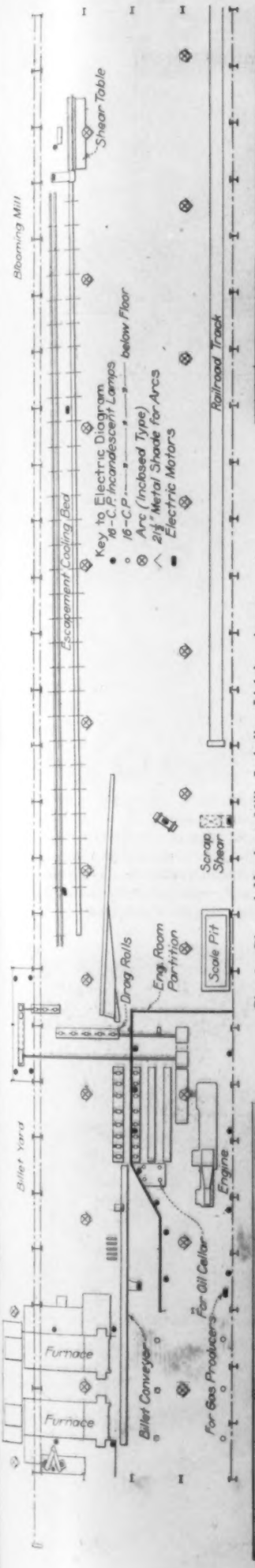


Fig. 9.—Plan of Merchant Mill, Including Lighting Arrangements.

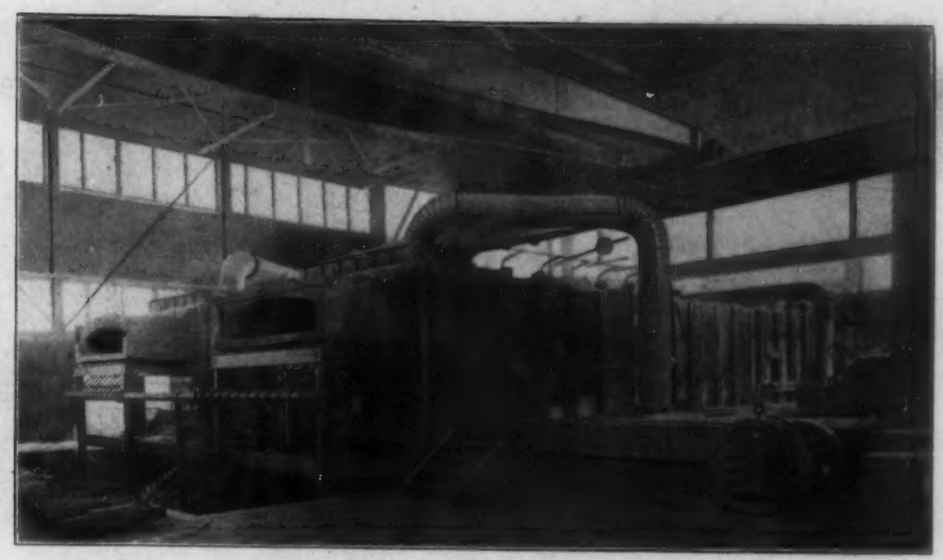


Fig. 10.—Reheating Furnaces from Point J, Fig. 2.

piles in the billet yard, along the full length of the conveyor, which is approximately 340 ft. Gates are arranged for discharging the billets to the continuous heating furnaces, where they are reheated for the merchant mill. A gate at the end of the conveyor is also provided for discharging the billets directly into railroad cars.

The conveyor consists of heavy cast-steel pans carried on 8-in. self-oiling rollers, and is driven by a 35-hp. motor. The steel framework is protected with heavy cast-iron pipes filled with concrete up to a hight of 6 ft. from the ground level, along the side of the conveyor where the billets and slabs are discharged. The conveyor has a speed of approximately 40 ft. per minute. It is provided with a sprinkling system for cooling the billets while they are being conveyed. The receiving end of the conveyor is provided with dead rolls, plates, etc., for the proper discharge of the billets from the shear table, which runs at a high speed, on the conveyor without injury to the latter.

The billet yard, which is alongside of the finishing mill, is 322 ft. long and 50 ft. wide. It is commanded by a 15-ton crane.

Scrap Conveyor

For handling the crop ends underneath the blooming mill shear a scrap conveyor was provided by the C. O. Bartlett & Snow Company. The crop ends fall from the shear through a chute upon an inclined conveyor, which carries them up and drops them into charging boxes so that they can be charged directly into the open-hearth furnaces. The conveyor consists of a heavy cast-steel apron, over which the crop ends are dragged by means of bars moved at either end by forged-steel roller chains. This conveyor is of very heavy construction and is driven by an electric motor.

The Finishing Mill

The finishing mill is housed in a building 598 ft. long and 85 ft. wide, the lower end of which adjoins the blooming mill building. A plan is given in Fig. 9. The mill is of the Morgan semi-continuous type designed and built by the Morgan Construction Company, Worcester, Mass. It finishes from 7/16 to 2-in. rounds and equivalent sections in squares and flats. The 4-in. billets are delivered to the back of the heating furnaces by the conveyor and crane in the billet yard and are placed on an inclined

Fig. 11.—View from Point K, Fig. 2, of Finishing Mill Engine.

Fig. 12.—View from Point L, Fig. 2, of Finishing Rolls and End of Cooling Bed.

platform, on which they are rolled down in front of a steam pusher. The pusher consists of two heavy swinging arms actuated by a steam cylinder under the platform.

The heating furnaces, two in number, Fig. 10, are 12 x 34 ft. and will receive billets 11 ft. long. The furnaces are of the Morgan regenerating type. The air blast is furnished by two Sturtevant fans, each driven by a self-contained motor. The furnaces are fired with natural gas. Billets are conveyed from the heating furnaces to the continuous mill on an electrically driven rolling table. This table is divided in the center by a hydraulic shear, which cuts the billets to the desired length, according to the size of bar to be rolled, the billets being cut to a length that will make bars 300 ft. long when they reach the cooling bed.

The conveyor delivers the billets to the first pass of the continuous roughing mill, which consists of eight stands of 14-in. rolls. Beyond the continuous train and at one side are four stands of 11½-in. finishing rolls of the Belgian type. Adjoining these latter stands are one pair of 7½-in. rolls and one stand of 8½-in. rolls, both of the Belgian type. Whether the metal is to be run through the last two stands depends on the sizes to be rolled.

The merchant mill is driven by a 32 x 56 x 60-in. C. & G. Cooper cross-compound condensing engine of 3000 hp., Fig. 11. The first eight stands are driven direct from the engine shaft through gears, each stand having a size of gear adjusted to the speed required. The other stands are belt driven from a fly-wheel, 22-ft. diameter, with a 62-in. face and weighing 132,000 lb.

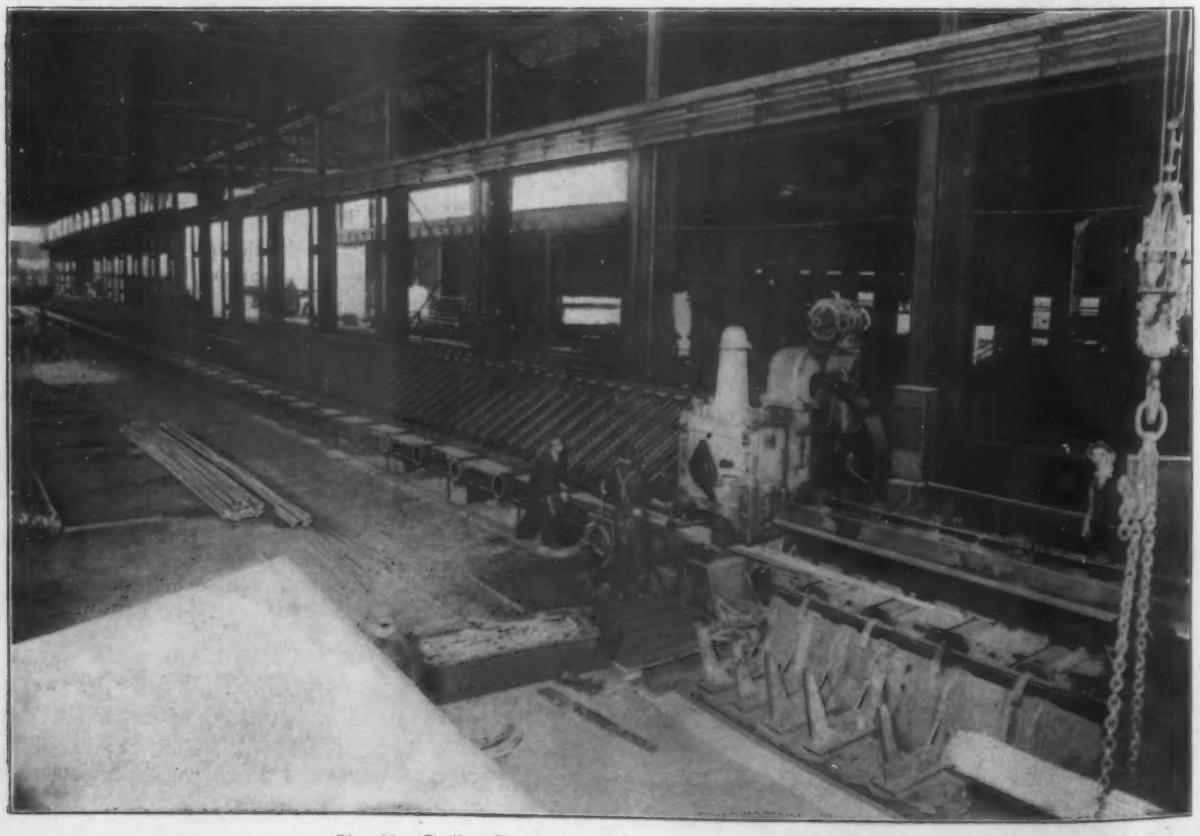


Fig. 13.—Cooling Bed and Bar Shear from Point M, Fig. 2.

The bar stock passes from the finishing trains to a cooling bed 300 ft. long of the Edwards inclined escapement type. Fig. 12 shows the finishing rolls and the end of the cooling bed. By the time the bar reaches the conveyor at the bottom of the bed it is thoroughly cooled. The conveyor carries the bars to a Morgan bar shear, Fig. 13 which cuts them in multiple to desired lengths. The shear is connected to a table with an adjustable gauge. The cut bars fall on the table back of the shear and an automatic pusher shoves them from the table to the scale platform. After being weighed they are taken from the scales in bundles by a crane. At the opposite side of the building is a Long & Allstatter No. 1½ shear, which is used for cutting short lengths. In case short bars are desired the bars are cut to a multiple of the desired length on the first shear and are resheared to the required length on the second shear. The bundled bars for shipment are loaded on cars on a depressed track, the car floor being level with the mill floor. Other equipment for handling stock in the merchant mill includes a bar twisting machine built by the United Engineering & Foundry Company, reels for coiling light bars and a Thomas Carlin & Son alligator shear for cutting scrap. In the finishing mill are two 15-ton cranes with an 85-ft. span.

Fig. 14.—Steel Bin for Ashes.

Fig. 15.—Rateau Regenerator at Right.

Fig. 16.—Coal Bins and Gas Pipes.

The Power Plant

The electric power plant is a General Electric installation throughout. The power building is 161 ft. long and 40 ft. wide. Electric power, which is used in the operation of the bolt and nut works as well as the steel plant, is developed by two 750-kw. turbo-generators of the Curtis type, both condensing. One is a high-pressure set that develops three-phase, 60-cycle current at 440 volts. The other is a mixed pressure set of the same rating. The voltage of the generators is held constant by means of a Tirrill regulator. Exhaust steam from the blooming mill engine is supplied to the mixed pressure set through a Rateau regenerator 7 ft. in diameter and 42 ft. long, Fig. 15. The plant is equipped with two 57-in. Helander condensers, built by the Mesta Machine Company. One condenser is used with the two turbines and the other with the finishing mill engine. Power for operating the bolt and nut works is furnished almost entirely by the mixed pressure set. Power for operating the cranes, the blooming mill table and the ore bridge is furnished by two 300-kw. motor generating sets, comprising synchronous motors with 250-volt generators. There is also a 15-kw. marine set and a 30-kw. motor generator set for excitation.

Condensing and service water is obtained by three motor-driven De Laval centrifugal pumps, two for a 100-ft. head and one for a 40-ft. head, all giving a capacity of 15,000,000 gal. in 24 hours. The pumps are driven by Westinghouse induction motors, two 150-hp. and one 50-hp. three-phase, type CCL.

The pumping station for service water is 30 x 25 ft. and is located near the river bank about 700 ft. from the steel plant. The pump house floor is 12 ft. above the river level and 23 ft. below the upper yard level. Water is taken from the river through a concrete tunnel. Two 150-hp. pumps deliver into a standpipe adjoining the boiler house for the supply of the boilers and for general cooling purposes. The water is both filtered and purified by a Dodge water purifier before being used in the boilers. Water for the two condensers is pumped direct by a 50-hp. pump.

Hydraulic power is supplied by two compound hydraulic steam pumps located in the blooming mill building. These pump against a head of 500-lb. per square inch. They were built by the Epping-Carpenter Company, Pittsburgh.

The boiler plant consists of eight units of 550 hp. each of Stirling boilers, which are equipped with McKenzie mechanical stokers. There is but one stack, 12 ft. diameter inside and 200 ft. high. The boiler house is 233 x 50 ft. Special attention has been given to the economical handling of coal and ashes. The coal is brought in on a trestle above the boiler house and is dumped into bins, Fig. 1, one bin of 50 tons capacity being provided for each boiler. From the bins it is automatically fed into the stokers.

The ashes are taken from the ash hoppers under the stokers in small industrial cars that are run out by hand through a tunnel underneath the stokers. These cars are discharged from the bottom into a pit, from which the ashes are elevated by a bucket elevator into a steel bin, Fig. 14, having a capacity of 50 tons. This bin is provided with two gates and chutes for discharging the ashes into standard railroad cars running on a track directly under the bin. The elevator and ash bin for the boiler house ash-handling plant were installed by the C. O. Bartlett & Snow Company, Cleveland, Ohio.

Coal-Handling Plant for Producers

The coal-handling plant for the producer house was furnished by the C. O. Bartlett & Snow Company. The coal drops into a track hopper from hopper bottom cars. The hopper is provided with a feeder of the plunger type for feeding the coal into a two-roll crusher having 24 x 24-in. rolls provided with steel toothed segments. It is arranged to by-pass the coal through the crusher by separating the rolls, in which case the feeder acts as a feeder to the elevator, which elevates the coal from the crusher to a steel flight conveyor. This conveyor distributes the coal in the hopper along the full length of the producer house. The hopper, or storage bin, has a capacity of 72 hours' supply of coal. This plant is capable of handling 50 tons per hour. The elevator, conveyor, crushers, etc., are operated by independent alternating-current motors.

The Pencoyd Works of the American Bridge Company, Pencoyd, Pa., put its 23-in. mill in operation last week and is now operating in all departments.

The Keystone furnace of the Reading Iron Company, Reading, Pa., which has been undergoing extensive repairs, will be ready to be blown in within a few weeks.

Box Column Drilling Machine

A New All-Geared Tool of the Sibley Machine Tool Company

Direct drive and the elimination of superfluous parts are the two special features of a new box column, all-geared drilling machine built by the Sibley Machine Tool Company, South Bend, Ind. The speed box is located on the top of the column and unnecessary parts that do not

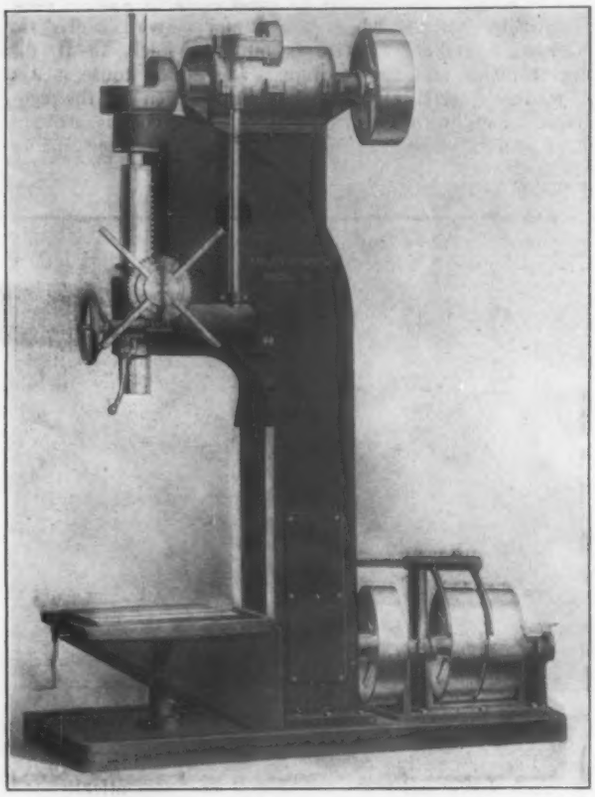


Fig. 1—The New Box Column All-Geared Drilling Machine Built by the Sibley Machine Tool Company, South Bend, Ind.

affect the range of the tool and its convenience of operation are said to have been eliminated. The machine has been designed with a view to convenience and it can be started and stopped, the feeds and speeds changed and the table adjusted without making it necessary for the operator to move from his position in front of the press. Fig. 1 is a general view of the new drill, while the remaining line engravings show various details. Fig. 2 is an elevation of the speed box. Fig. 3 shows front and side elevations of the feeding mechanism and Fig. 4 is a sectional elevation of the lower portion of the column showing the oil cup and tank of the lubricating system.

It will be noticed from Fig. 1 that the machine is heavy and compact and that there are no exposed moving parts. The speed box is located on the top of the column which is said to be the logical place, and this situation necessitates the use of only one pair of bevel gears to deliver power to the cutting tool. Eight speeds are available, and any of these can be selected instantly without the employment of intermediate change gears. The feed gears which are semi-steel are always in mesh and the changes are effected by an internal key. Six long split bushings having an ample bearing surface carry the main gear shafts which are of high carbon steel. The entire mechanism runs in an oil bath as illustrated in Fig. 2 to insure constant and

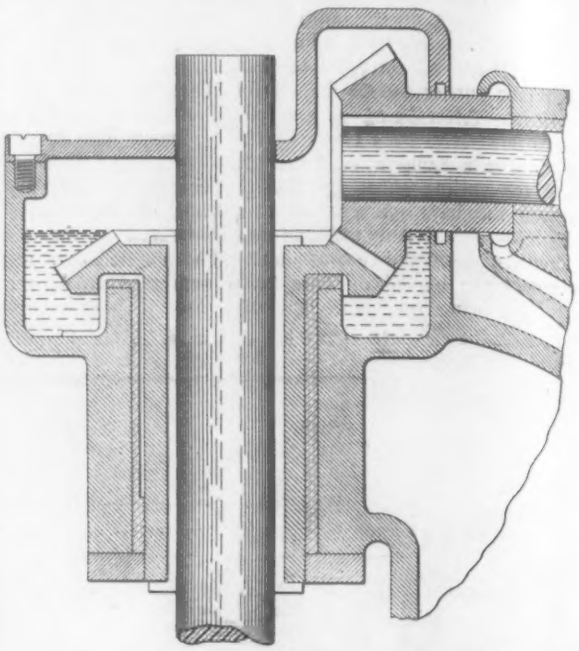


Fig. 2.—Detail of the Speed Box Showing Bevel Gears Running in Oil.

thorough lubrication, and hoods at the ends of the bearings catch the surplus oil which returns to the gear case through large drains. The high carbon steel spindle and its graduated sleeve are finished by grinding. The spindle runs in two bronze bearings, equipped with self-oiling devices and a ball thrust collar is employed to take care of the thrust.

The main driving shaft which rotates the spindle directly also drives the feed mechanism and the reduction gearing is of such a ratio that a powerful feed is obtained. There is only one pair of steel bevel gears in the entire feeding mechanism and these, together with the rest of the gears and the steel worm, are inclosed and run in an oil bath. Four changes and a neutral position are obtained by moving a small knob in the center of the hand wheel. An adjustable collar on the graduated spindle sleeve trips a latch when the desired depth of hole has been reached and the entire mechanism swings down from the worm gear on a large hinge pin. Front and side elevations of this mechanism are given in Fig. 3.

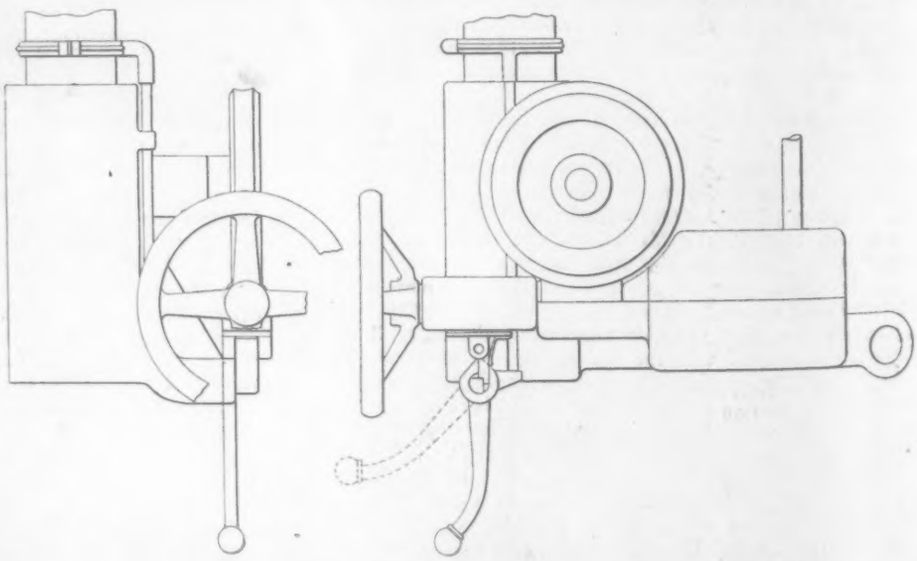


Fig. 3.—Front and Side Elevations of the Feed Mechanism.

All the gears of the machine are inclosed and run in oil baths. The countershaft bearings, together with those

of the spindle, are equipped with self-oiling devices. One of the exclusive features of the machine is the pump and tank for supplying lubricant to the cutting tool. The tank, the pump, and all pipes are inclosed within the column as shown in Fig. 4 and the cutting compound returns to the tank through a drain in the table. In this way it is possible to keep the machine in neat condition and chips and dirt are prevented from getting into the compound.

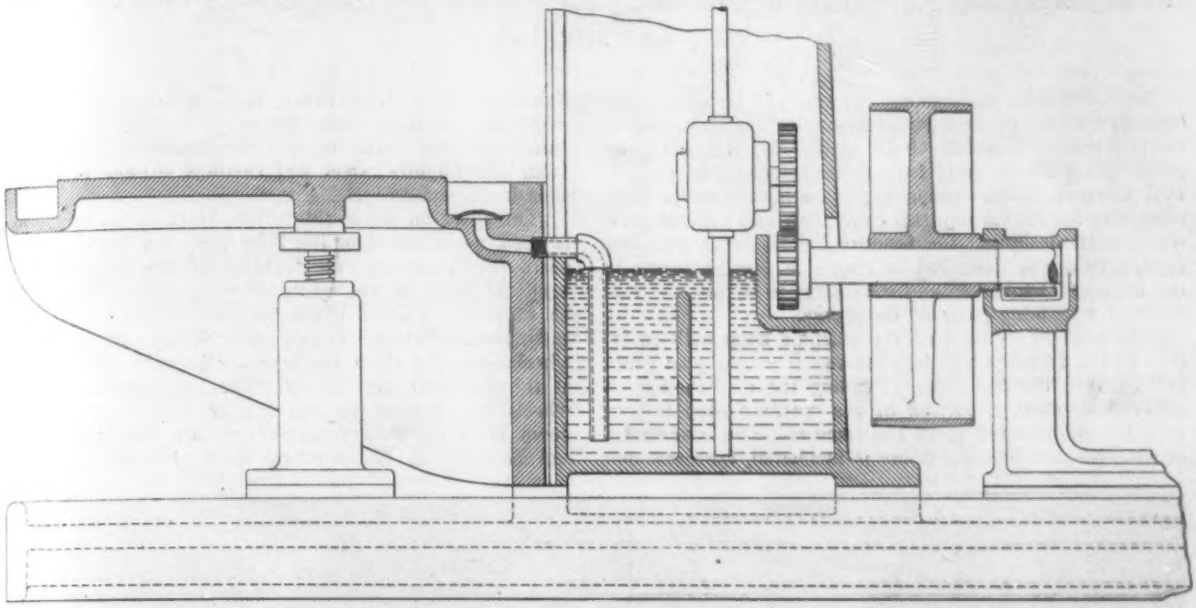


Fig. 4.—Sectional Elevation of the Lower Part of the Column Showing the Oil Pump and Tank.

The following table gives the principal dimensions and specifications of the drill:

Swing, in.	24
Maximum distance between spindle and table, in.	27
Vertical adjustment of spindle, in.	12
Number of feed changes	4
Minimum feed per revolution of spindle, in.	0.008
Maximum feed per revolution of spindle, in.	0.032
Diameter of smallest drill handled, in.	¾
Diameter of largest drill handled, in.	1¾
Minimum diameter of spindle, in.	1¾
Diameter of spindle sleeve, in.	3⅜
Morse taper of hole in spindle	No. 5
Working surface of table, in.	16 x 20
Vertical adjustment of table, in.	20
Diameter of pulleys, in.	13
Face width of pulleys, in.	4½
Minimum spindle speed, r.p.m.	75
Maximum spindle speed, r.p.m.	450
Countershaft speed, r.p.m.	400
Over-all hight, in.	82
Weight, lb.	2200
Floor space required, in.	29 x 57

"Tests of Nickel-Steel Riveted Joints," by Arthur N. Talbot and Herbert F. Moore, has just been issued as Bulletin No. 49 of the Engineering Experiment Station of the University of Illinois. This bulletin describes tests of riveted joints of nickel-steel in tension and in alternated tension and compression. The slip of rivets and the strength of joints were determined. From the tests, the general conclusion is drawn that in riveted joints, designed on the basis of ultimate strength, the use of nickel-steel may be of advantage; but that in riveted joints designed on the basis of frictional hold of rivets, while it may be advantageous to use nickel-steel for the plates, rivets of ordinary steel seem to resist slip as well as rivets of nickel-steel. Copies of the bulletin may be obtained gratis upon application to W. F. M. Goss, director of the Engineering Experiment Station, Urbana, Ill.

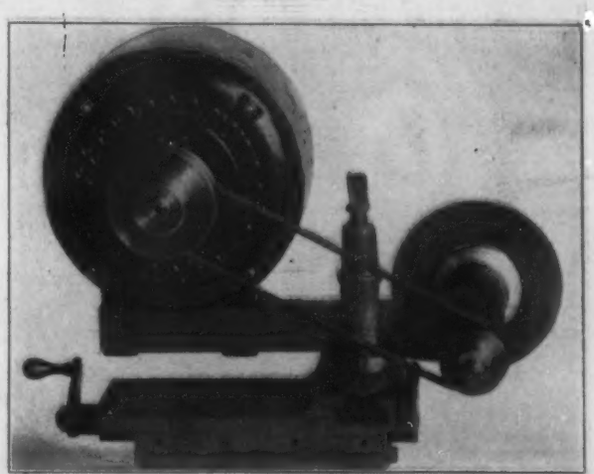
The Kuhner Engine Company, Oxford, Md., has just completed the erection of a machine shop, one story, 50 x 160 ft., of concrete construction. Later on the company will be in the market for miscellaneous equipment, including some machine tools, but is not yet ready to consider propositions.

The United States Cast Iron Pipe & Foundry Company is to move its offices, except the local sales office and executive committee rooms in the Empire Building, New York City, to its works at Burlington, N. J., about May, 1912.

Motor-Driven Lathe Center Grinder

A new motor-driven lathe center grinder has been placed on the market by the Willey Machine Company, Jeffersonville, Ind. The grinder is intended to be mounted on the compound rest of the lathe, the motor being placed on the bar projecting from the tool post and driving the emery wheel through a round belt. In this way it is possible to use a standard motor and run the wheel at a high speed.

To set the wheel at the proper angle for grinding the centers, the compound rest is swiveled and the screw feed employed The centers of lathes having plain rests can be ground by taking a number of cuts the width of the wheel in succession. For grinding milling cutters, reamers, etc., a tooth rest is furnished. Two sizes of tool are built having wheels 4 and 6 in. in diameter, and faces ¼ and ⅞ in. wide.



A Motor-Driven Grinder for Lathe Centers Made by the Willey Machine Company, Jeffersonville, Ind.

At Newark, Wayne County, N. Y., November 14 and 15, a peremptory sale of the entire Mora automobile plant, including 60 cars, will be made to the highest bidder. The machinery of the plant has been assembled in the past three years and is therefore of modern type. The engine of the Mora car is a reproduction of the Packard engine, being one of the highest powered engines on the market. Bidders will be offered an opportunity of purchasing single cars, and arrangements will be made with the purchasers of the patterns to supply the owners of Mora cars with any parts desired.

S. DIESCHER & SONS
Mechanical and Civil Engineers,
PITTSBURGH, PA.

Machine Shops of Rumely Tractor Works

Arrangement and Equipment of Machinery for Making and Erecting Oil-Pull Tractors at La Porte, Ind.

An unusually interesting group of manufacturing buildings, typifying modern ideas of factory arrangement and equipment, has been built by the M. Rumely Company, at La Porte, Ind., for the manufacture of its Oil-Pull tractors, which comprise self-contained power units especially for harvesting, soil cultivation and general farm work. The design of the foundry building and accessory departments was described at length in these columns in the issue of October 26 and it remains to outline the features of remaining parts of the works.

The relative location of the machine shop with reference to the foundry may be observed from the plan given in Fig. 1 in the last issue. Pending the construction of an erecting shop, a portion of the machine shop is now used for the assembling of the tractors. This association of machine and erecting floors is incidental, however, and the nature of it is indicated in the floor plan of the machine shop, Fig. 19. The present machine shop is 612 ft. long and 100 ft. wide with a 50-ft. longitudinal bay and a 25-ft. bay on each side. A 200-ft. addition to the machine shop is now in process of erection. A cross-section showing the simple style of structural design is presented in Fig. 16. In the main bay the clearance under the bottom truss chord is 44 ft. 7¾ in., which is enough higher than the side bay to give a monitor effect. A gallery is hung in each side bay the full length of the shop at a height of 15 ft. above the main floor. The building columns have a longitudinal spacing of 17 ft. The crane service in the center bay is supplied from a 5-ton Cleveland crane, one 5-ton and one 10-ton Pawling & Harnischfeger crane with 3-ton auxiliary. Jib cranes carrying ½ to 1½-ton hoists are hung from the columns over the heavy duty machines. Running down the center of the bay a broad gauge trucking track is laid and the industrial system from the foundry, steel and castings storage enters the shop under the crane.

The space on either side of the track in the center bay is used, as indicated in the floor plan, for the storage of parts for machining, the location of the various pieces being adjacent to the machines upon which they are to be finished. This is illustrated in Fig. 17. The rough castings—crankcases, engine cylinders, gears and flywheels—and the shaft forgings are brought into the shop at the end near the factory. The structural shapes and wheels for making up the tractor frames are brought down from the gallery where they are fabricated at the end adjacent to the erecting floor. Storage space for these parts is provided as illustrated in the floor plan. Along one side of the building and adjoining the assembling floor a general stock room 150 ft. long and the full width of the side bay, is located. On the same side nearer the central entrance door are testing and inspection facilities and the general shop office. On the opposite side of the shop is a tool room.

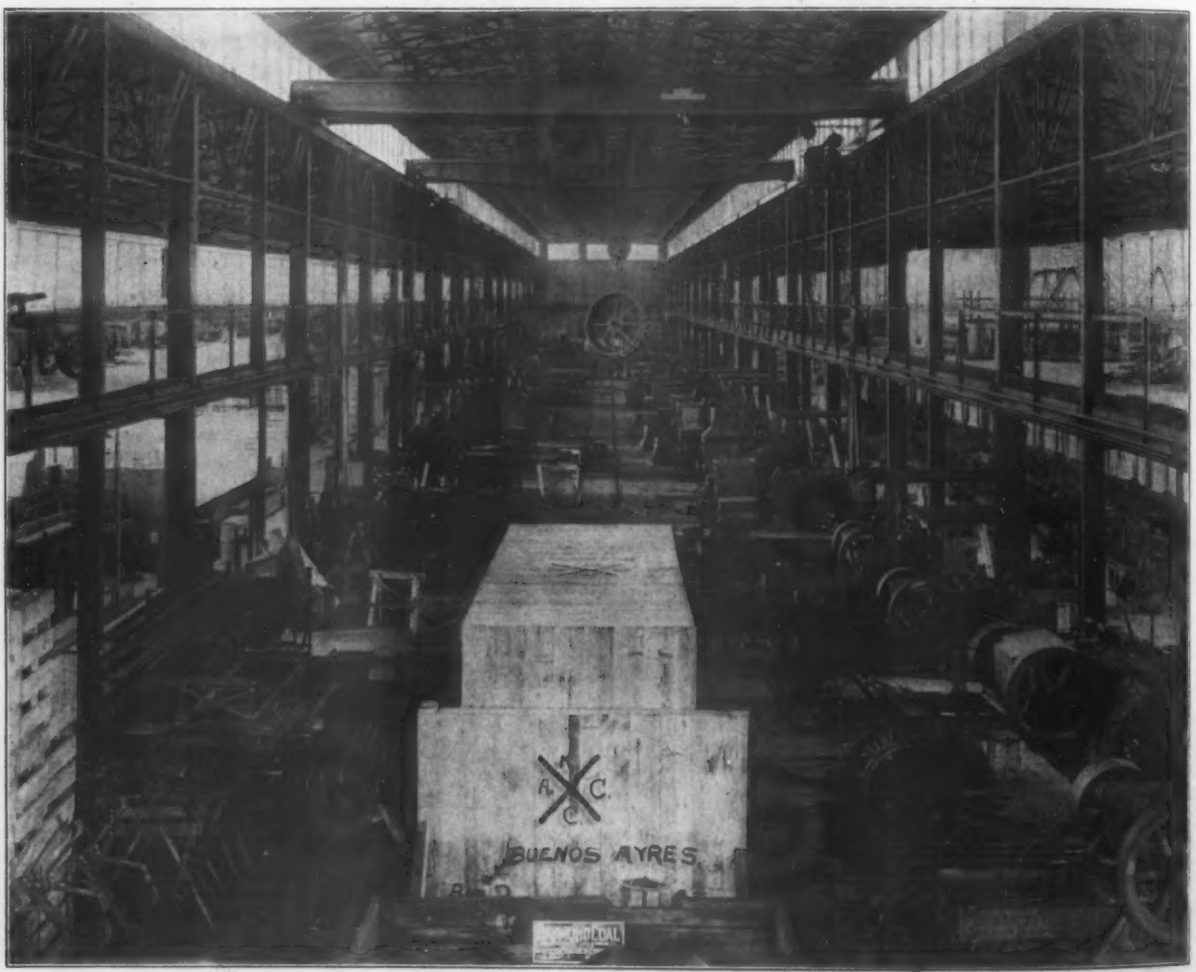


Fig. 15.—General View of the Machine Shop, with Its Balcony Floors.

The demand for tractors has crowded the shop ahead of the establishment of a fixed routing of work, and certain of the machining operations as now performed are expedient rather than a matter of choice. For example, the crankcases have had to be machined on planers thus far and only recently has it been possible to arrange this work for machining on a milling machine. The floor plan, Fig. 19, with the accompanying key, illustrates the

general scheme in the placing of tools. The machines necessary to each of the operations involved in the complete finishing of a part are located so as to reduce move-

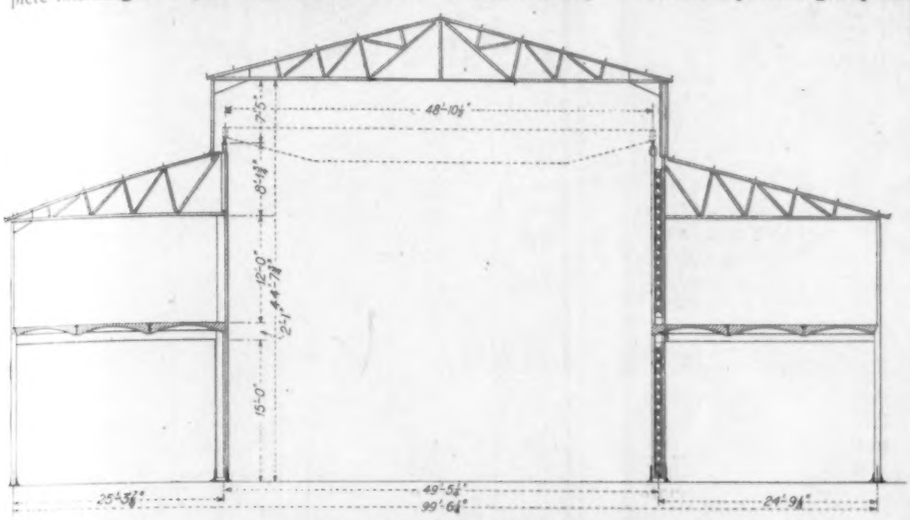


Fig. 16.—Cross Section of Machine Shop Indicating Structural Design.

ment of the uncompleted work, lengthwise of the shop, to a minimum. The work moves forward and backward across the bay as illustrated by the placing of planers and lathes on both sides of the central bay. The tool drive is in part by individual motors, but more largely by group belt drive from motors.

The machining of the crankcases on a group of six Cincinnati planers, arranged three on each side of the main bay, has some interesting features. The nature of the work required may be understood from the view of this part shown in Fig. 18. The machining of all the necessary surfaces in the fewest possible operations is complicated by the fact that in one direction the plane of the base of the crankcase is not parallel with the top. The planers are equipped with four heads. The piece is first set up on its feet to be machined in the direction in which top and base are parallel, in which position the top face for the cover joint is machined. It is then turned 90 degrees and upside down and set in a jig sloped at the proper angle and two sides and the bases are machined. To machine the remaining two sides and the bearings inside it is necessary to again turn it right side up and set it in the jig. The bearings and the cylinder openings in the crankcase are finished on a C. C. Wormer Machinery Company two-spindle horizontal boring machine and the cover bolt holes are drilled on a group of radial drills including one Fosdick and three furnished by the Western Machine Tool Works, Holland, Mich.

Fig. 17.—Crank Shaft Storage and General Storage of Parts in Center Bay.

The crankshaft bearing caps are planed up on a single-head Pond Machine Tool Company planer.

The heavy lathe group consisting of eight on one side of the main bay and three opposite is largely used for turning the various shafts including the crank shaft and master gear shaft. In machining the double throw crank shaft and journal bearings are turned on one lathe and the crank pins on another machine, rigged up with an offset center in the tail stock and a jig for offsetting the crank on the face plate. For facing the throw cranks, the shaft is set up on a Cincinnati planer fitted with two heads. With a tool on each side the opposite faces are finished in the same operation. The master gear shaft requires four long keys spaced at 90 degrees around the shaft. Instead of cutting keyways and fitting keys, the shaft is turned oversize for the length of the keys and then put on an Ingersoll milling machine which mills out the excess stock down to the shaft diameter

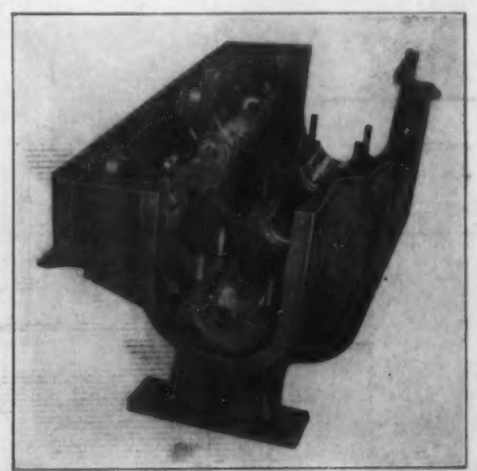


Fig. 18.—Engine Crank Case Indicating Required Machine Work.

leaving four solid keys. Several types of lathes are installed including Lodge & Shipley geared head, Schumacher & Boye, Le Blond high speed and New Haven Mfg. Company heavy duty. These lathes are also used for turning some of the smaller pulleys and flywheels to relieve the group of four Niles-Bement-Pond horizontal boring mills on which most of the flywheels, gears and pulleys are turned up. For the shafts requiring a high finish, a 20 x 120-in. belt-driven Landis Tool Company precision grinder is available.

For boring and facing the engine cylinders three Barrett Boring Machine Company, Meadville, Pa., horizontal boring machines are provided and the complete machining of the cylinders, boring and facing, in one setting insures absolute alignment. These machines are also used for finishing the cast-iron hub spiders for the tractor wheels. The wheel spokes are bolted to the hub flange and a corresponding number of holes are drilled in one operation on two Baush Machine Tool Company vertical drilling

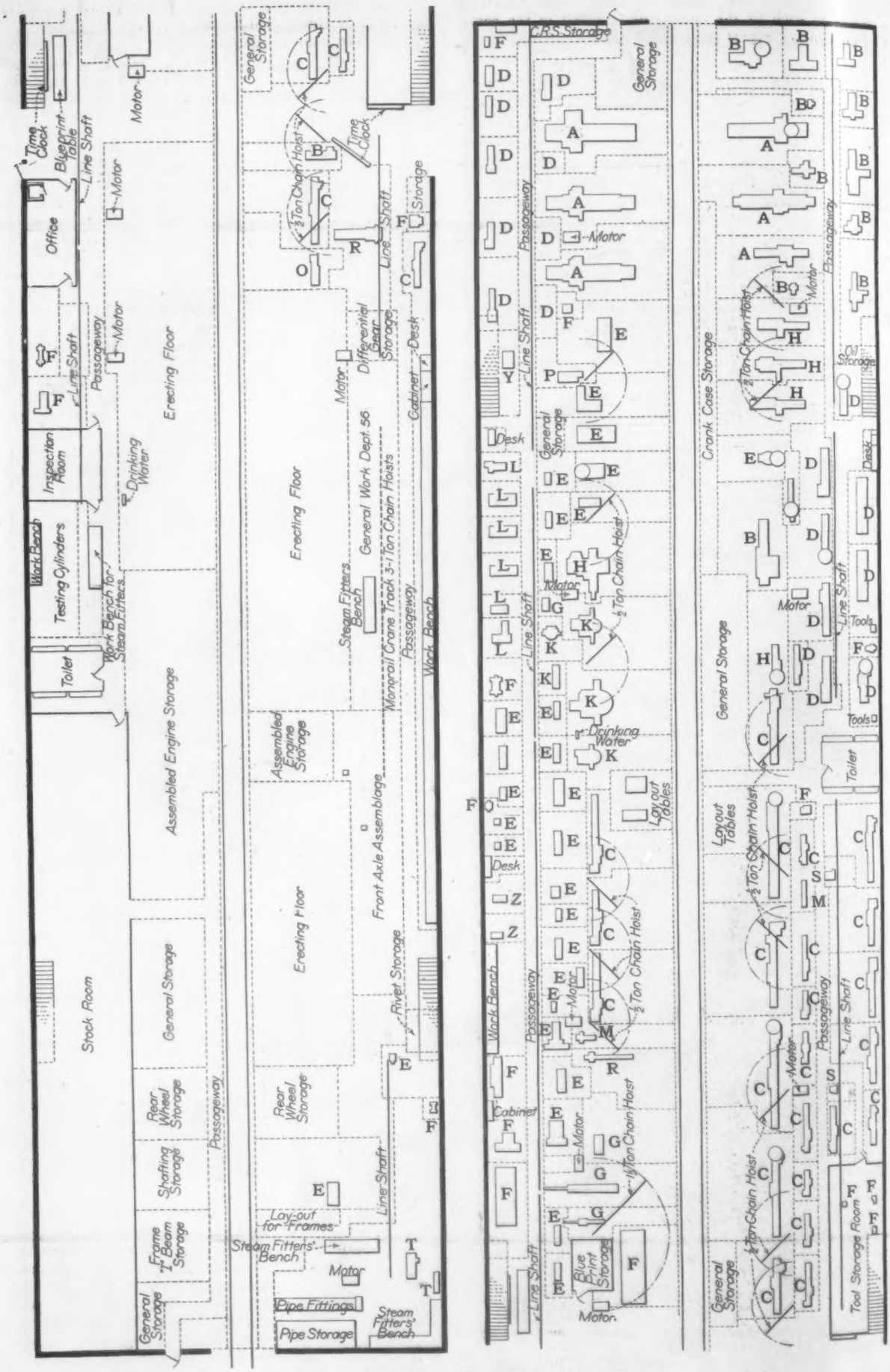


FIG. 19.—PLAN OF MAIN FLOOR OF RUMELY MACHINE SHOP.

Key to Machines:

A, Planers.
B, Milling Machines.
C, Engine Lathes.
D, Turret Lathes and Screw Machines.
E, Drill Presses,
F, Grinders.
G, Broaching and Keyseating Machines.
H, Boring Mills Horizontal.
K, Boring Mills Vertical.
L, Gear Cutters.
M, Centering Machines.
N, Punching and Shearing Machines
O, Saws.
P, Shapers.
R, Hydraulic Machinery.
S, Arbor Presses.
T, Pipe Machines.
U, Furnaces.
V, Rolls and Bending Machines.
Y, Bolt Threaders.
Z, Auto. Tapper.

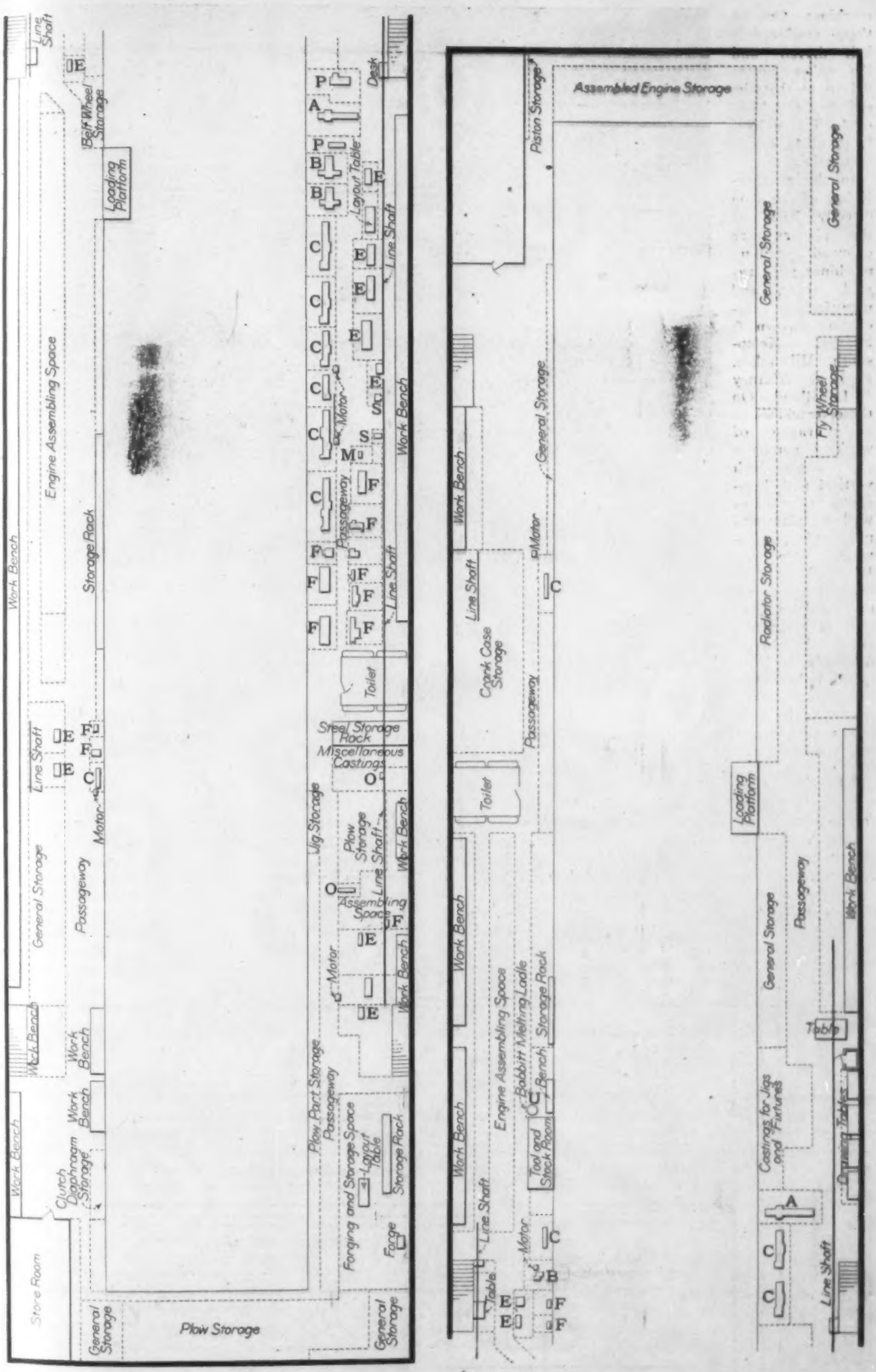


FIG 20.—PLAN OF GALLERY FLOOR OF RUMELY MACHINE SHOP.

Key to Machines:

A, Planers.
B, Milling Machines.
C, Engine Lathes.
D, Turret Lathes and Screw Machines.
E, Drill Presses.
F, Grinders.
G, Broaching and Keyseating Machines.
H, Boring Mills Horizontal.
K, Boring Mills Vertical.
L, Gear Cutters.
M, Centering Machines.
N, Punching and Shearing Machines.
O, Saws.
P, Shapers.
R, Hydraulic Machinery.
S, Arbor Presses.
T, Pipe Machines.
U, Furnaces.
V, Rolls and Bending Machines.
Y, Bolt Threaders.
Z, Auto. Tapper.

machines. One of these machines is belt driven and the other motor driven so that the enforced shutdown of both is unlikely to occur simultaneously.

In the northerly bay of the shop directly back of the planers are grouped milling machines of varied type and manufacture including Brown & Sharpe, Kempsmith, Milwaukee, Pratt & Whitney & Le Blond. On these machines a wide range of work is performed, requiring both vertical and horizontal spindles as well as plain and universal equipment. On an Ingersoll miller bearing caps are machined in multiple arrangement.

Fig. 21.—View Showing Particular Function of Overhanging Balcony Platform.

In the same bay back of the heavy lathes the boring and reaming of small gears and flywheels is handled on five Gisholt and five Steinle turret lathes. One of the latter lathes is equipped for turning up piston rings from a continuous cylindrical shell casting. The one tool for surfacing the casting to the piston ring diameter is followed by a cutting-off tool which automatically turns off the rings of desired width. For pressing on to the several shafts, the wheels and gears machined on the turrets, a Chas. E. Elmes Engineering Works hydraulic press is conveniently located. The engine pistons are machined on a patent head Lodge & Shipley lathe which is a part of a mixed group of medium size lathes arranged near the tool room. A No. 4 and No. 5 Greenerd arbor press are included in this group.

At the end of the opposite bay containing the group of planers a row of five Pratt & Whitney turret machines are installed for working up bar stock into studs and pins for various purposes. Small brackets are machined on a Smith & Mills shaper and the engine valve stems are finished two at a time on a double chuck bolt cutter. The gear-cutting machines are grouped in this bay and include a gear-cutter and a hobbing machine built by the Newark Gear Cutting Machine Company, a gear-generating machine of the type built by the Gleason Works, Rochester, N. Y., and four machines of the Gould & Eberhardt type. The miscellaneous drilling operations and some of the large work for which vertical boring mills are more adaptable, are performed on an adjoining group of machines.

In this section vertical boring mills of Colburn & Rogers type and several types of upright drills are installed including models built by the Cincinnati, Rockford, Hamilton, Aurora Tool Works, John B. Morris, and an Economic upright. Two Baker Bros., Toledo, tapping machines are used both for tapping the hole and for putting in the stud. The placing of studs with these machines can be made a comparatively rapid operation. For grinding cams and piston rings, two Norton grinders are used. Two LaPointe broaching and keyseating machines handle the major portion of the keyway cutting.

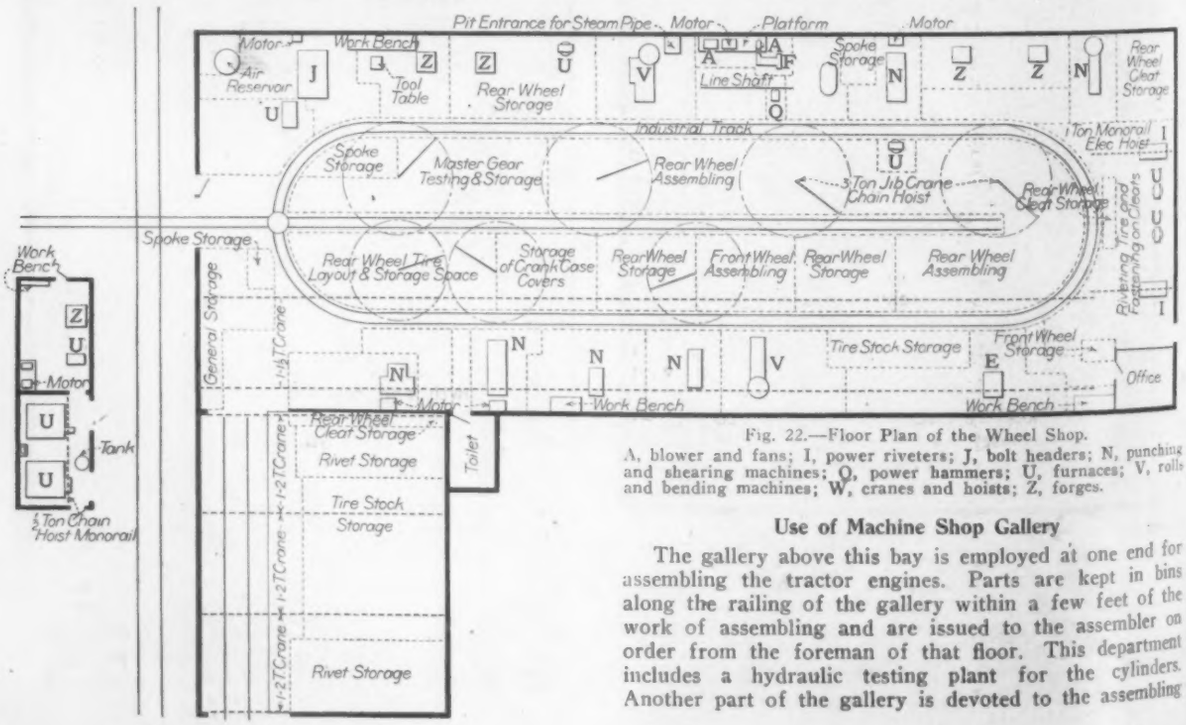


Fig. 22.—Floor Plan of the Wheel Shop.
A, blower and fans; I, power riveters; J, bolt headers; N, punching and shearing machines; O, power hammers; U, furnaces; V, rolls and bending machines; W, cranes and hoists; Z, forges.

Use of Machine Shop Gallery

The gallery above this bay is employed at one end for assembling the tractor engines. Parts are kept in bins along the railing of the gallery within a few feet of the work of assembling and are issued to the assembler on order from the foreman of that floor. This department includes a hydraulic testing plant for the cylinders. Another part of the gallery is devoted to the assembling

of the crankshafts in the crankcases, the hand-fitting and bench work on the pistons and connecting rods taking up the gallery between the two assembling operations. An I-beam trolley with Cyclone and Triplex chain hoists traverses the gallery floor. One end of the opposite gallery is used for the storage, assembling, and painting of the tractor radiators; the other end for the fabrication of the structural framework. The middle section of this gallery is used for light machine work and tool grinding. For grinding the teeth on the cutting bar of the LaPointe keyseaters, a small motor with a grinder on its armature shaft is mounted on the tool post of a Cincinnati planer and with the bar set upon the planer table the operation becomes very simple. A Universal Boring Machine Company horizontal boring machine, two small Le Blond millers, several small lathes, a shaper and three grinders of Landis Diamond and Espen-Lucas types are used—in conjunction with bench equipment for fitting by hand—to prepare the various small parts of the engine for assembling in the other gallery. Bar stock for working up into small shafts and pins is handled in four Cleveland automatic machines arranged along the gallery railing. For setting keys in this small work and where a driving fit is required, Greenerd arbor presses are used. The handling of material from the main floor to the gallery, and vice versa, is provided for from two loading platforms overhanging from each gallery as illustrated in Fig. 21. The artificial lighting of the machine shop is by tungsten clusters.

The Wheel Shop

The wheel shop in which the tractor wheels are built up is a building 70 x 200 ft. with a rivet, spoke and tire steel storage annex 50 x 60 ft., as shown in the ground plan, Fig. 22. The storage room is spanned by three parallel 2-ton cranes and hand hoists under which a spur from the yard switch tracks enters at right angles, extending into the wheel shop so that material may be handled readily in and out of storage. In the wheel shop the machines are placed around the wall and in the center the material is handled and riveted. Over the punching and shearing machinery, a runway of 18 ft. span provides for the installation of four 1½-ton chain hoist travelers operating the entire length of the shop. Material is handled to and from these machines to the middle of the shop by three 3-ton jib cranes with an 11-ft. radius and three 1-ton jib cranes with 10-ft. radius arranged within an industrial track loop which connects this shop with the rest of the plant.

The wheel spokes are riveted to the rim through two flanges which are upset, complete in two operations, on an Acme Machinery Company bolt heading machine. The spokes are heated in a Rockwell oil furnace and the two bolt holes are punched simultaneously in a Long & Allstatter horizontal punch. The shearing and punching of the rims is performed on single Long & Allstatter guillotine shear and vertical open-gap punch. The spokes and tire treads are riveted on the tire, hot, in two Hanna Engineering Works gap riveters. One-ton electric hoist monorails hung over these riveters support the work. The rivets are heated in Tate-Jones oil burning furnaces. The general forge work is also done in this shop and open forges are used. Blast is supplied from a Connersville and a Buffalo Forge fan mounted overhead but delivering through a blast pipe laid under the floor.

The Power Plants

The power and boiler plants are located in a separate building which also provides for an electrical repair shop and store house. The power plant is practically a Nordberg installation. In consists of two 19 x 36 x 36-in. cross-compound units, direct connected to 500-kw direct-current Fort Wayne generators running at 120 r.p.m. The engines are equipped with the Nordberg patent long-range cut-off valve gear and are run condensing. A 32 x 32 x 14-in. duplex steam-driven jet condenser takes care of the two engine units, one of which is a spare, and also the 1500-cu. ft. air compressor. This compressor delivers air for the pneumatic riveting and chipping tools at 100 lb. pressure. The boiler plant consists of a battery of six hand-fired Atlas Engine Works boilers. A C. W. Hunt industrial track and car, coal and ash handling system is used.

The current from the main power plant is augmented by that generated in the tractor testing shed and illustrated in Fig. 23. In this shed a row of generators is mounted on an elevated platform of a length such that on either side eleven tractors may be tested simultaneously. The tractors are belted up to the generators and, as the tests are continuous for a minimum of 48 hr., a large aggregate of power is developed. The present shed is to be supplanted by a permanent testing plant more advantageously located and this location is to be used as a paint and inspection shed.

Fig. 23.—View of Temporary Testing Shed of Rumely Tractor Works.

The shop system in operation at this plant because of its rapid growth and comparative newness is, in many respects, in a formative state. An aggressiveness in the adoption of methods embodying as much of scientific management principles as the constructive period through which the plant is passing will permit is, however, quite apparent. In the foundry, where the use of machines makes possible the employment of a large proportion of unskilled labor, the work is departmentized with supervising instructors in each department available for routing work to the best advantage and for personal contact with each employee and his particular task. Analyses of production are made continuously and equitable piece rates are established for a large proportion of the work. Similar methods are in operation in the machine shop.

The Morris 16-In. Lathe

A New Machine Tool Possessing Increased Productive Capacity

Ability to withstand the stress of heavy duty service, great driving power coupled with the requisite strength in the design of the details and the incorporation of a number of novel features tending to increase the productive capacity characterize a new 16-in. quick change engine lathe which has recently been brought out by the John B. Morris Machine Tool Company, Cincinnati, Ohio. Some of the special features of the new tool are the use of the back gears which are double frictions possessing ample pulling power on large diameters, an improved type of headstock reinforcement, the combination of a system of sliding gears with the regular cone and tumbler gears of the quick change mechanism, a new way of connecting this mechanism with the feed rod and the lead screw and the employment of an interesting arrangement of clutches in the apron for engaging the carriage feed. The power of the machine is apparent from the statement that it is capable of taking a ¼-in. cut in 0.60 per cent. carbon steel at a peripheral speed of 75 ft. per minute and a feed of ⅛ in. A view of the lathe is given in Fig. 1, while Figs. 2 and 3 illustrate some of the details, the former showing the arrangement of the gears in the quick change mechanism and the latter being a rear view of the apron.

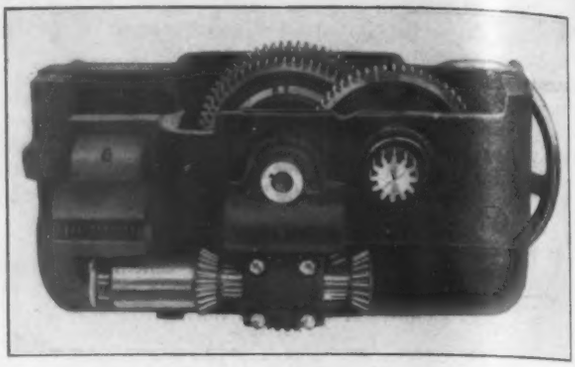


Fig. 3—A Rear View of the Apron.

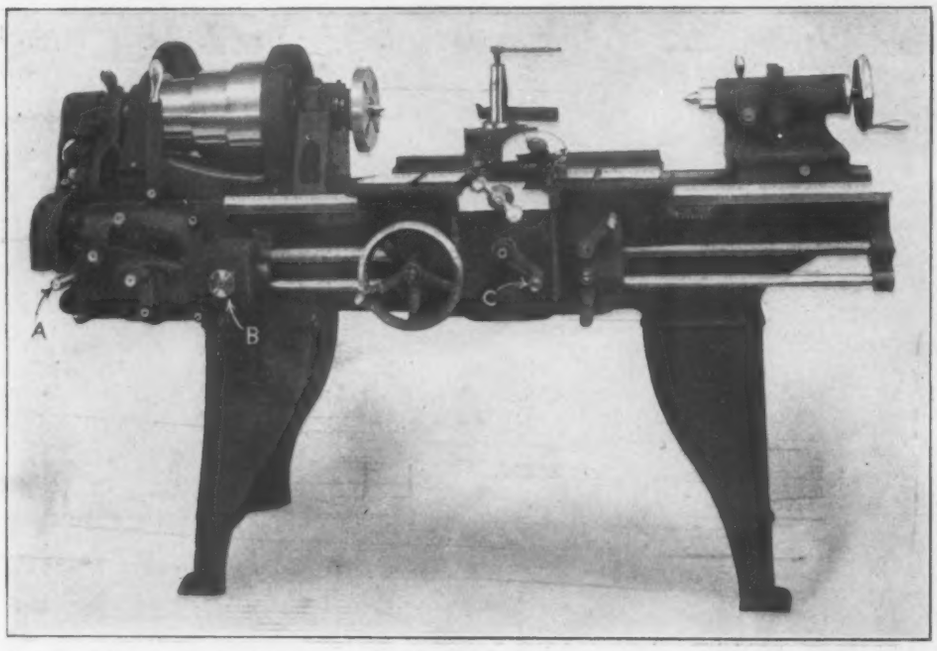


Fig. 1.—A New 16-In. Quick Change Engine Lathe Built by the John B. Morris Machine Tool Company, Cincinnati, Ohio.

The quick change gear mechanism illustrated in Fig. 2 consists of the usual cone and tumbler gear combined with a system of sliding gears which through the use of 21 gears enables 45 changes of feed or thread leads to be secured. The three levers shown on the front of the gear box, Fig. 1, control the changes in the feeds, which range from 2 to 60 threads per in., the one at the left, A, Fig. 1, being used to secure the extreme range. Steel is used throughout the machine in the construction of the feed gears which are exceptionally heavy for a tool of this kind, the lightest gear in the mechanism having the diametral pitch of 9. To render as wide a range of threads as can be obtained on a standard engine lathe available, the end of the lathe is fitted with the regular quadrant and quadrant gear for connection to change gears when it is necessary to secure a special thread. The manner of connecting the feed rod and the lead screw with the quick change gear mechanism is a new feature, the connection being accomplished by a sliding gear. The knurled handle B at the extreme right of the gear box controls the operation of this sliding gear and is arranged so that when the lead screw is in operation the feed rod is at rest and vice versa. This makes the quick change gear box a complete mechanism and enables it to be taken out of the lathe bed as shown in Fig. 2 without disturbing the adjustment of the lead screw or the feed rod.

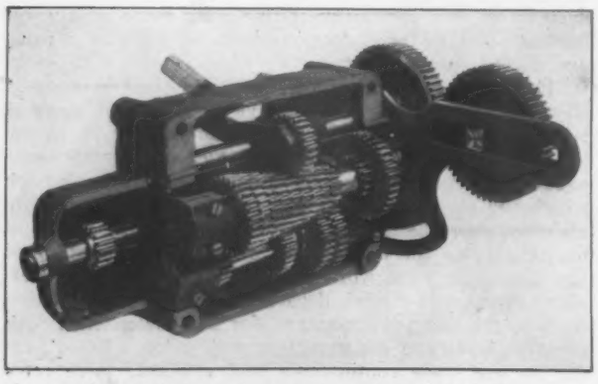


Fig. 2—The Quick Change Gear Box Removed from the Lathe, Showing the Arrangement of the Gears.

A one-piece casting of box section with all studs and gears supported in bearings at either end is used for the apron, which is supplied with the usual bevel gear reversing mechanism. This interlocks with the half nut so that it is impossible to engage the lead screw and the feed rod at the same time. A novel arrangement of clutches is employed to overcome the difficulty usually encountered in engine lathes due to the inability of the operator to manipulate the revolving knurls for engaging the feeds on account of the high speed at which these parts revolve. The frictions, which are of the expanding ring type, are 5 in. in diameter and are engaged by means of a toggle lever movement. These frictions are shifted by the single crank handle C, Fig. 1, on the front of the apron, and when this lever is thrown to the right the longitudinal feed is engaged, while if thrown to the left, it engages the cross feed. This lever being stationary at all times, it is possible for the operator to work up to a shoulder without the necessity of throwing out the feed and running the carriage up by hand, and in addition it is in a particularly convenient position for him to manipulate at all times. A positive stop makes it impossible to throw the lever from one feed to the other without first pulling the plunger pin in the handle out, thus making it impossible to pass directly from the longitudinal to the cross feed or vice versa.

The carriage is carried on a V at the front and on a flat surface at the back of the bed, the bearing being 26½

in. long. A long flat clamp at the back and two taper gibs at the front which bear on the machined surface directly under the front V hold the carriage in position. It is pointed out that the location of these gibs makes it impossible for the carriage to lift or to climb the V and at the same time they will not throw the carriage out of alignment should they be improperly adjusted. The width of the front V is exceptionally large, being 1½ in. wide. The carriage bridge is wide and drops down in a deep double box section between the shears. It is not necessary to notch the bridge for clearance since the tailstock ways are dropped below those for the carriage, and in this way the carriage bridge is kept rigid. The compound rest is made heavy to withstand the strains imposed upon it by the modern high speed steels. A single bolt which is conveniently located with reference to the operator's position operates the clamping device which consists of a V-shape clamping ring of the same general construction as that employed in radial drills for clamping the arm to the column. The advantages of this arrangement are said to be a quick adjustment of the rest and keeping the bottom slide more rigid than it would be with the T slot turned in it.

The box section tailstock is of massive construction, and is arranged with the regular type of set-over for turning tapers. The spindle is 2 3/16 in. in diameter and is clamped by a taper plug similar to that used in the overarm of milling machines. Two large bolts which come up directly in front of and behind the tailstock spindle, and reach to the top of the tailstock where the nuts are in a convenient place for the operator are used to clamp the tailstock to the bed.

The bed which is strongly ribbed with cross girths is 11¾ in. deep and 14½ in. wide. The front girth which is located directly beneath the front spindle bearing extends to the top of the ways in order to resist the twisting strain on the bed at this point. It will be noticed from Fig. 1 that the legs are set in from the ends of the bed, thus shortening the span between the supports and making use of the familiar cantilever form of construction.

The swing of the lathe is 16½ in. over the shears and 10 in. over the carriage. The lathe when equipped with a 6-ft. bed will mount work 32 in. long between centers and weighs approximately 2100 lb.

New List Prices for Iron Body Gate Valves

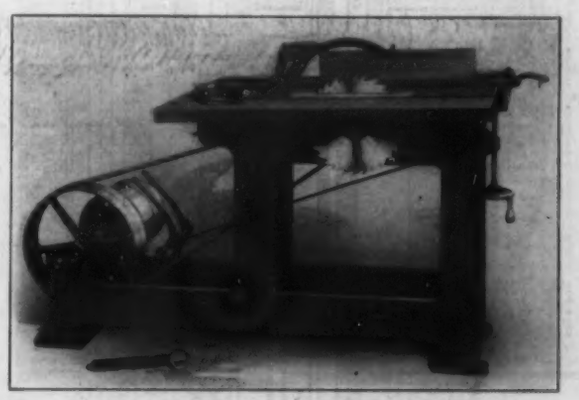
A new schedule of list prices covering iron body gate valves of standard, medium and extra heavy construction is about to be issued. A number of manufacturers have been striving for some time to eliminate the irregularities in the present list resulting from the development of improvements which placed certain types out of relation with other types. The new list is intended to become operative November 15, but the date may have to be extended. The new list is also calculated to take into account the changes which may be necessary to conform to the standard flange fittings which have been pretty generally standardized by a committee of the American Society of Mechanical Engineers. The last meeting to consider this subject on the part of the engineers' committee was scheduled to be held October 25. An adoption of the standards as now proposed would involve in some cases the use of flanges of larger diameter for certain sizes of fittings than is now made by a number of leading manufacturers. They will require also in some cases a larger number of bolts of larger diameter spaced on a bolt circle of larger diameter than is now in vogue. Elaborate tests, it is understood, have been made at Cornell University to ascertain the stresses set up in bolts used with flanges subjected to high static pressure. The tests were made to serve in establishing the standards.

Annealing arrangements in malleable iron foundries is the subject of a pamphlet printed for general distribution, describing mechanical handling devices which have enjoyed satisfactory use in a plant for a year and a half. Copies of the pamphlet can without doubt be obtained from George K. Hooper, Hooper-Falkenau Engineering Company, 165 Broadway, New York City. A plan and elevation of the installation is given to show how the material is handled by dropping the pots filled with scale on a grating under which is a conveyor which carries the scale to a point where it is screened and crushed, and the dust is removed.

The New Silver Saw Table

For shop and factory use and for the ordinary run of work a new saw table, for which the advantages of simplicity, efficiency and accuracy are claimed has been recently placed on the market by the Silver Mfg. Company, Salem, Ohio. This table is very similar to the one which was illustrated in *The Iron Age* September 9, 1909, but differs from it in having the saw stationary and the table adjustable, while in the earlier table the reverse was the case. A new design of frame is also used.

The table, which is slightly lighter than the one used on the other machine and weighs 50 lb. less, is hinged at the back of the frame on a 1-in. steel shaft, and the rise and the fall at the front is regulated by a screw and hand wheel. Iron strongly ribbed and planed perfectly smooth is used for the table, which has a working surface of 31 x 38 in. The cut-off or miter gauge slides in two grooves, extending one on each side of the saw line for the entire length of the table and enables a miter up to a maximum of 45 deg. either way to be cut. Grooving heads having a maximum width of 2 in. can be used, and when grooving operations are to be performed the wooden throat piece can be removed. The frame, which is of a new design, is cast in one solid piece and is both strong and well proportioned. The 1⅜-in. saw mandrel is 24 in. long and is carried in babbitted bearings 3½ in. long set in top of the solid frame, an arrangement which eliminates the vibrations of the saw. The journal caps are adjustable for wear and are held in place by four cap screws. The pulley on the mandrel



A New Type of Saw Table Built by the Silver Mfg. Company, Salem, Ohio.

has a 4⅞-in. face and is machine finished all over. Saws up to a maximum diameter of 14 in. can be used, although the regular diameter is 2 in. less. A 1-in. hole is cut in the saw for the mandrel to pass through. When it is desired to change the saw this can be easily done by raising the table and removing the throat piece. The projection of the saw above the table when level is 3 in. A clamping collar having a diameter of 4 in. is used.

Metal fences are used. A hand wheel holds the ripping fence rigidly in place at an angle of 45 deg. The maximum distance between this fence and the saw is 18 in., the desired width of the cut being indicated by a scale graduated in sixteenths. This fence can be clamped at any point or removed entirely to leave the table clear for special work. A safety guard is attached to a metal guard over the saw and serves to protect the operator from injury.

The belt shifter is within easy reach at the right of the operator and has a device to prevent the belt from creeping back from the position in which it is set. The countershaft is 30 in. long and is supported in bearings 5 in. long at the end of the solid frame. Tight and loose self-oiling pulleys, 10 in. in diameter and having a 5-in. face, are mounted on the countershaft and are designed to run at a speed of 650 r.p.m., which gives the saw a speed of 3000 r.p.m.

The regular equipment of the table includes a 12-in. saw of either the cut-off or rip type, a cut-off fence, a nut wrench for the mandrel and a safety guard. If desired a boring bit or chuck can be fitted to the rear end of the arbor and a special boring attachment can be furnished also.

Case Hardening of Steel*

New Industrial Process and Results from Its Use

The type of furnace which experience has proved to be best adapted to the case-hardening of small and medium-sized objects with the mixed case-hardening agent (granular carbon and carburizing gas) consists of cylindrical muffles arranged vertically and heated by producer gas. It is a double-muffle furnace provided with regenerators, of the kind constructed by C. M. Stein, of Paris, for the Sampierdarena Engineering Works, of G. Ansaldo, Armstrong & Co.

The parts of the apparatus particularly applied to the case-hardening process are represented in the drawing, which shows a section through the center of the vertical

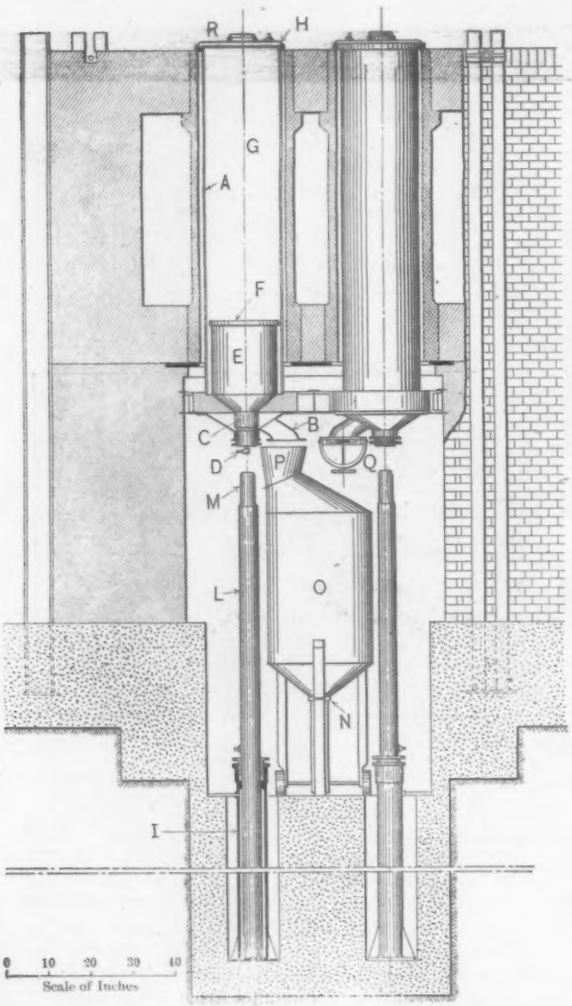


Fig. 1.—Section of Vertical Case Hardening Furnace.

muffles of the furnace with the accessory apparatus completely mounted. Inside each of the muffles of refractory material is placed a cylindrical retort of mild steel, A, the external diameter of which is about 0.4 to 0.8 in. less than the internal diameter of the muffle. Mannesmann seamless tubes serve very well for making the retorts, as they are easily obtainable in stock sizes up to 14 in. diameter. For retorts of larger diameter, as in the case of the furnace here represented, tubes welded by the autogenous process are used.

The retort is supported on a bottom flange attached to a frame fixed to the brickwork of the furnace. The arrangement which serves to hold the retort, whether it is being supported by the bottom flange or by the upper flange, H, intended to receive the cover, is such as to enable one retort to be replaced by another in a few minutes. To the bottom flange is attached a cast-iron funnel, B, closed at the bottom by a non-return valve Q.

The steel nozzle C, admitting the carburizing gas, passes through an opening in the side of the funnel, provided with a good-sized boss. The gas, which, as has been previously stated, may consist of carbon monoxide or dioxide, in a pure state or mixed with other gases, is introduced through the screwed tube D, and through the nozzle C. This latter is connected to the hollow cast-steel dish E, intended to support the pieces to be case-hardened by means of the disk F, consisting of a steel plate covered with refractory material.

The carbon monoxide, after passing through the hole bored axially in the nozzle C, is delivered into a small distributing device placed inside the dish E, from which it passes to the case-hardening chamber A, through a number of holes provided in the disk F. During case-hardening the dish E is supported upon a series of projections on the same lower flange to which the funnel B is attached. This ring has thus to sustain the entire weight of the dish E, the disk F, and any articles to be case-hardened which may be resting directly or indirectly on the disk.

Mode of Operating

In the case of spur wheels, the maximum diameter of which might be 4 to 6 in. less than the internal diameter of the retort, the first thing to be done is to unscrew the tube D; then by means of the plunger L, actuated by the hydraulic cylinder I, the whole of the parts C, E and F are lifted together, the blunt conical end of the plunger engaging with these as it rises. The plunger is cooled internally with water circulation, to avoid heating it in case it should accidentally remain raised inside the retort for too long a period. When the piston has reached the end of its stroke, the upper surface of the disk being now only about 12 in. below the cover of the retort, the cover is removed, and the wheels to be case-hardened are piled horizontally one on top of the other upon the disk. As the wheels are inserted one by one, the apparatus carrying the weighted portions gradually sinks, and the charge is complete when the apparatus has reached the lowest position indicated in the figure. In that position the last wheel charged should be at least 12 in. below the upper edge of the retort.

Generally, the articles to be case-hardened are charged hot at a temperature of about 1500 to 1650 deg. F., this being a matter of prime importance, as it affects most favorably both the quality of the product and the economy and regularity of the operation. For the preliminary heating of the pieces a small coal-fired muffle will serve, since the uniformity of temperature which can be obtained in such a furnace is quite sufficient for the purpose. If, however, the case-hardening furnace is not being worked to its fullest capacity, one of the vertical muffles may be used for the preliminary heating of the articles, while the case-hardening of the charge is proceeding in the other. In that case the best method of working the furnace is to use the muffles alternately, the one for case-hardening and the other for pre-heating the pieces.

As soon as the articles to be case-hardened have been inserted as described, the cover is placed on the retort and the bottom discharge pipe N, leading from the iron box O, is passed through the central opening in the cover. This box is full of the granular carbon still hot (generally at about 1650 deg. F.), which was discharged from the retort after use during the case-hardening operation last concluded. The box is easily swung above the muffles, being suspended by a tackle from a swinging arm. The outer walls of the box, notwithstanding that its contents of granular carbon are at a temperature of about 1800 deg. F., do not become heated above 400 to 500 deg. F. during the time required for the loading and unloading of the retort, even when working under the most unfavorable conditions.

The box O having been adjusted as indicated, the butterfly valve which closes the lower end of the opening N is gradually opened, and in a few seconds the whole of the free space in the retort surrounding the pieces is filled with glowing granular carbon. The author has previously pointed out that the hot granular carbon employed by him for case-hardening with his mixed medium constitutes a mass which, particularly at high temperatures, is endowed with a mobility comparable to that of a liquid. On this account it is able to penetrate simply by its own weight into all crevices among the articles to be case-hardened,

*From a paper read before the October meeting of the Iron and Steel Institute at London, Eng.

and between these and the walls of the retort. The filling up may be further assisted by means of iron rods introduced through holes in the cover and manipulated by the operator who stands on the furnace.

When the granular carbon has been filled in up to a level of ¾ or 1 in. below the upper edge of the retort

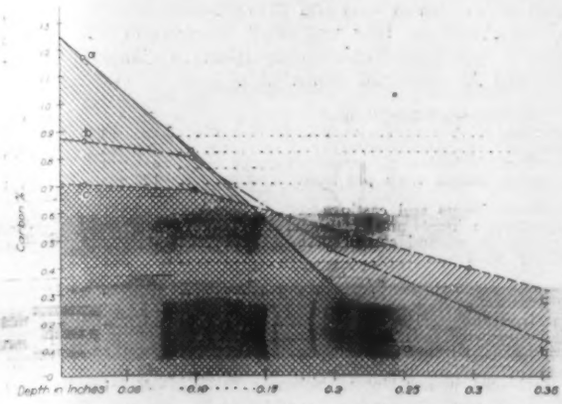


Fig. 2.—Diagram Showing Effect of Case Hardening.

the butterfly valve of the tube N is closed, the box O is lifted, the central opening of the cover is closed, the plunger L is lowered and the tube D is screwed into the nozzle C, through which the carbon monoxide or dioxide, pure or mixed with air, is admitted gradually to the distributor E and thence into the retort. In order to regulate the current of carbon monoxide an ordinary gas meter of the dry type is used. The case-hardening then proceeds without further trouble, the only thing that is necessary to be watched and regulated being the current of gas and the temperature.

For the observation of the temperature, an operation which, with the type of furnace described and when adjusted properly, does not often require to be made, an ordinary thermo-electric pyrometer is used by passing it through any one of the holes in the cover from time to time and inserting it into various parts of the mass of granular carbon. The temperature should be maintained quite constantly at a fixed point between 1650 and 2000 deg. F.

The gas issuing from the retort through the pipe fixed in the cover can be collected in a gasometer, and after suitable regeneration it will serve for further heats. The necessary length of the heating period can be determined with the greatest precision, and is dependent on the result which it is required to obtain. When the heating has proceeded long enough the current of carbon monoxide is shut off, the tube D is removed and the discharge of the retort is undertaken. Where results of a very special nature are not aimed at, the discharging operation begins

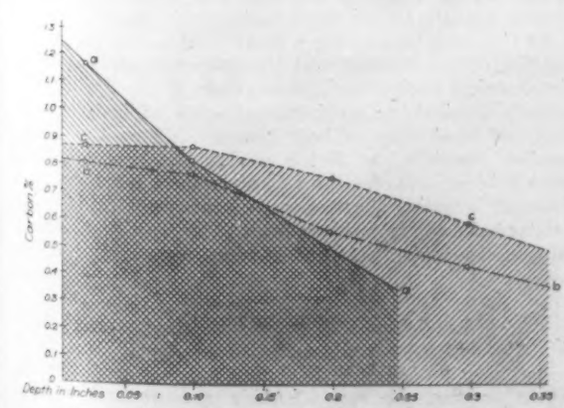


Fig. 3.—Diagram Showing Effect of Case Hardening.

by withdrawing the whole of the granular carbon at once, and removing it through the non-return valve Q in the box O, now placed underneath.

Where, however, exceptionally graduated case-hardening is required the specific action of the carbon monoxide is isolated during the last phase of the case-hardening from the direct action of the granular carbon. A quantity of the granulated carbon is drawn out from the retort. Only those parts of the case-hardened pieces are uncovered in which a well-graduated case-hardening is required. Sufficient solid carbon is retained in the retort to ensure the desired chemical equilibrium of the gas. The remainder of the carbon is removed from the retort after the second phase of the case-hardening with isolated carbon monoxide has proceeded long enough to attain the desired results.

Results of Operation

In almost all cases occurring in the practical production of case-hardened pieces for machine construction, in which the carburized zone is seldom required to exceed 0.08 in. in thickness, the period of case-hardening never exceeds 2 hr., and may even be reduced to 1 hr., the time being reckoned from the moment of completing the charging operation to that at which discharging begins. It therefore includes the time necessary for bringing the temperature up to working point, which requires not more than 10 min., owing to the fact that both the solid carbon and the pieces are already hot when charged.

The foregoing particulars show that in practice, under ordinary working conditions, the time for a complete heat is less than 2½ hr., and since the weight of a charge, which retorts of the size shown in the accompanying sketch can conveniently hold, varies from a minimum of 220 lb. in exceptionally unfavorable cases to a maximum of over 1100 lb., it will be seen that the productive capacity of each retort ranges from a minimum of 1 ton to a maximum of 5 tons of case-hardened steel pieces per 24 hr.

The furnace with vertical muffles has distinct advantages in the speed of working for a given charge, simplicity of operating, and in the uniformity of the treatment of all the pieces forming the charge in the muffle. The clearance spaces left in the retort are reduced to a minimum.

In the accompanying tables are collated the results of estimations of the carbon in successive layers of a thickness of 0.02 in., obtained by case-hardening with the mixed agent, followed by exposure to the action of carbon monoxide isolated in the manner previously described. The material used was an ordinary mild steel of the following composition: Carbon, 0.12 per cent.; silicon, 0.06 per cent.; manganese, 0.47 per cent.; sulphur, 0.02 per cent.; phosphorus, 0.03 per cent.

(a) Case-Hardening for 10 Hr. at 2000 Deg. F. with the Mixed Agent.

No. of the Range of Single Layers Analyzed.	Distance from the Surface of the Central Portion of the Layer Analyzed, in.	Amount of Carbon in the Single Layers. First Determination, per Cent.	Second Determination, per Cent.	Mean, per Cent.
1	0.02	1.16	1.18	1.17
5	0.10	0.80	0.82	0.81
10	0.195	0.33	0.35	0.34

Both in the first series of experiments, as well as in the succeeding series, similar pieces of steel were subjectd simultaneously to each of the various treatments and under identical conditions, one piece of which was used after each operation for the purpose of making a quantitative determination of the carbon in the successive layers.

(b) After Reheating the Same Carburized Zone for 5 Hr. at 2000 Deg. F. in Isolated Carbon Monoxide.

No. of the Range of Single Layers Analyzed.	Distance from the Surface of the Central Portion of the Layer Analyzed, in.	Amount of Carbon in the Single Layers. First Determination, per Cent.	Second Determination, per Cent.	Mean, per Cent.
1	0.02	0.84	0.86	0.85
5	0.10	0.76	0.80	0.78
10	0.195	0.46	0.46	0.46
15	0.29	0.23	0.27	0.25

(c) After Reheating Same Zone for Another 5 Hr. (Altogether 10 Hr. of Reheating) at 2000 Deg. F. in Isolated Carbon Monoxide.

No. of the Range of Single Layers Analyzed.	Distance from the Surface of the Central Portion of the Layer Analyzed, in.	Amount of Carbon in the Single Layers. First Determination, per Cent.	Second Determination, per Cent.	Mean, per Cent.
1	0.02	0.69	0.71	0.70
5	0.10	0.66	0.68	0.67
10	0.195	0.52	0.54	0.53
15	0.29	0.38	0.40	0.39

The numerical data contained in the three tables relating to the first series are graphically represented in Fig. 2.

In the second series the material used was a chromium nickel steel of the composition here given. This is a steel of the kind ordinarily used for Krupp armor-plates.

The author proposes later to present particulars relating to case-hardening to considerable depths as carried out upon this steel by the process described in the paper. The composition is: Carbon, 0.33 per cent.; silicon, 0.06 per cent.; manganese, 1.15 per cent.; sulphur, 0.02 per cent.; phosphorus, 0.015 per cent.; chromium, 1.50 per cent.; nickel, 3.17 per cent.

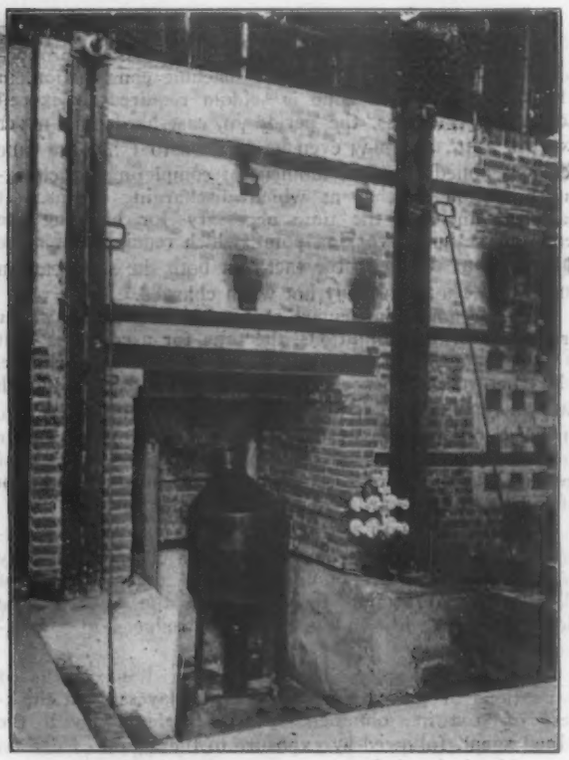


Fig. 4.—View of the Case Hardening Installation.

Second Series.

(a) Case-Hardening for 10 Hr. at 2000 Deg. F. with the Mixed Agent.

No. of the Range of Single Layers Analyzed.	Distance from the Surface of the Central Portion of the Layer Analyzed, in.	Amount of Carbon in the Single Layers. First Determination, per Cent.	Second Determination, per Cent.	Mean, per Cent.
1	0.02	1.18	1.14	1.16
5	0.10	0.79	0.82	0.81
10	0.195	0.49	0.51	0.50

(b) After Reheating the Same Carburized Zone for 5 Hr. at 2000 Deg. F. in Isolated Carbon Monoxide.

No. of the Range of Single Layers Analyzed.	Distance from the Surface of the Central Portion of the Layer Analyzed, in.	Amount of Carbon in the Single Layers. First Determination, per Cent.	Second Determination, per Cent.	Mean, per Cent.
1	0.02	0.80	0.81	0.80
5	0.10	0.76	0.78	0.77
10	0.195	0.58	0.58	0.58
15	0.29	0.45	0.44	0.45

(c) After Reheating the Same Zones for a Further 5 Hr. (Total Reheating Period 10 Hr.) at 2000 deg. F. in Isolated Carbon Monoxide.

No. of the Range of Single Layers Analyzed.	Distance from the Surface of the Central Portion of the Layer Analyzed, in.	Amount of Carbon in the Single Layers. First Determination, per Cent.	Second Determination, per Cent.	Mean per Cent.
1	0.02	0.87	0.85	0.86
5	0.10	0.85	0.88	0.87
10	0.195	0.75	0.75	0.75
15	0.29	0.60	0.58	0.59

The numerical data contained in the three last tables, relating to the second series, are graphically represented in Fig. 3.

The principal causes of brittleness and peeling, which always occur in a greater or less degree in steels case-hardened by the ordinary process, are excessive concentration of carbon in the superficial zones of the case-hardened pieces, and the rapid diminution of the carbon in passing to the deeper layers. The ability to alter the form of the curves of case-hardening, as shown in the diagrams, suggests that case-hardening can also be successfully applied to those special steels on the exterior of which the ordinary process of case-hardening yields carburized zones, which are practically useless on account of their excessive brittleness.

Swedish Iron and Steel Statistics.

The following statistics of the production of coal, iron ore, pig iron, steel ingots and castings, and rolled iron and steel in Sweden in 1909 and 1910 are taken from the Bulletin of the American Iron and Steel Association, which states that it is indebted chiefly for them to General Director Richard Akerman, of Stockholm.

Products—Metric Tons.	1909.	1910.
Iron ore	3,886,060	5,552,678
Coal	246,808	302,786
Pig iron, including direct castings	444,764	603,939
Charcoal blooms from pig iron	120,669	151,713
Bessemer ingots and castings	63,351	97,583
Open-hearth ingots and castings	248,757	372,451
Crucible ingots and castings	927	2,215
Blister steel	391	212
Total steel	[illegible]436	472,461
Bar iron and steel	[illegible]736	204,955
Nail and wire rods and bands	[illegible]643	137,465
Other shaped iron and steel bars	[illegible]183	23,417
Plates, not including sheets	[illegible]898	22,081
Tube blocks, hollow blooms, billets	31,201	43,690

The production in 1910 of first quality iron ore amounted to 4,938,044 metric tons. Of this total only 132,190 metric tons contained less than 50 per cent. of metallic iron, while 984,269 tons contained from 50 to 60 per cent. and 3,821,585 tons contained from 60 to 70 per cent. of metallic iron.

Of the total production of pig iron in 1910 598,660 metric tons were made in blast furnaces, and 890 tons of pig iron, 4,242 tons of ferrosilicon, and 147 tons of other ferroalloys were made in electric furnaces. Included in the total production in 1910 are 10,319 tons of castings made direct from blast furnaces.

Of the total production of steel ingots and castings in 1910 463,298 tons were ingots and 8951 tons were castings. Of the production of Bessemer ingots and castings 44,150 tons were acid Bessemer and 53,433 tons were basic Bessemer, and of the total production of open-hearth ingots and castings 146,510 tons were acid and 225,941 tons were basic. Included in the 2215 tons of crucible steel ingots and castings reported are 431 tons made by the crucible-electric process. In 1909 there were produced 591 tons of open-hearth electric steel. The production of steel ingots and castings by the acid Bessemer and acid open-hearth processes in 1910 amounted to 190,660 tons and by the basic Bessemer and basic open-hearth processes to 279,374 tons.

In 1910 the production of manganese ore amounted to 5752 metric tons, as compared with 5212 tons in 1909.

The question of rusty water in domestic water-heating services is of such wide-spread interest that an opportunity to get in convenient form some of the studies of experts on the subject is welcome, and so mention is made of the appearance of three bulletins from the National Tube Company, one giving a paper read before the American Society of Heating and Ventilating Engineers by the metallurgical engineer of the company, F. N. Speller, who made a detailed study of the corrosion of both wrought iron and steel pipes in bath houses of New York City; another containing an article by Ira H. Woolson on the same subject, and the third bulletin outlining the salient features, including illustrations, of the paper read by Mr. Speller before the American Society for Testing Materials, showing how tubes are tested to insure the quality of the metal.

The Philadelphia Roll & Machine Company, Philadelphia, has adopted a trade mark, which it will place on all its castings to indicate that they are not made by the cupola process. Because of their strength and wearing qualities, the company designates its air furnace charcoal iron rolls and other castings as Near Steel.

The New Jersey Arnold Damper Company has begun the erection of a concrete steel and brick factory building on property recently acquired at Netcong, N. J. The work is to be done from the plans of Frank B. De Lara, industrial engineer in charge. The company will manufacture automatic flue dampers.

Baltimore Industrial Notes

J. Henry Miller, Inc., has the contract for the erection of the F. S. Royster Company's 12-story office building, in Norfolk, Va. Bids have gone in on the structural work, comprising some 1600 tons, but it is said that plans are to be revised and new bids for the structural work asked.

Proposals for the second section of the storm water drain in the bed of Jones' Fall, Baltimore, were opened by the Board of Awards, October 26, and referred to the Sewerage Commission for tabulation. Fisher & Corozza are said to be the lowest bidders. The section of work extends from Center street to Guilford avenue.

The Chesapeake Iron Works reports business in October as having been rather quiet. Few large contracts for structural steel work have been taken, although there has been considerable miscellaneous business both in structural and ornamental iron work placed on its order books. A recent small contract was closed for an addition to the Baltimore News Building.

Dietrich Brothers have completed the erection of the structural steel work for the new Baltimore Bargain House Building, and are busy on the addition to the Maryland Casualty Building. New contracts for structural work have not been very heavy, although several covering buildings requiring from 100 to 200 tons have been taken. A very fair business in plain shapes and plates is reported. The major portion of recent orders come from local concerns.

The rail mill of the Maryland Steel Company at Sparrow's Point has been temporarily closed down owing to a shortage of orders for this year's delivery. The marine department of the works is comparatively busy and the outlook for further orders promising. Other departments of the plant are not very actively engaged.

It is stated that two-thirds of the property needed for the proposed commercial wharf and recreation pier, to be erected in East Baltimore, has been acquired. The estimated cost of this pier is $850,000, of which over half will apply on the construction.

The Water Department of the city will ask for proposals at an early date for the construction of a dam above Rock Raven Run. The dam is to be 192 ft. high, planned for a further increase to 230 ft., and will provide a reservoir for 3,000,000,000 gal. of water. A. F. Quick, City Hall, is the water engineer.

The Baltimore Bridge Company has taken a number of orders during the month, the majority of which have been for export. These include an extra span for the Santa Clara Bridge and a 42-ft. plate girder span for the Madre de Dios Bridge, as well as some general work in bridge material for the Northern Railway, Costa Rica. Material for a 20-stamp section mill will be furnished the Alban-Garey-Goldfield Company, Costa Rica, and material approximating 275 tons for cargo cranes on the Isthmus of Panama will be furnished the Maine Electric Company. Several small local contracts have also been taken, including material for an extension to the roof garden of the Emerson Hotel. The plant of the company is operating at full capacity.

The contract for sewerage screens for the municipal sewage disposal plant, for which bids were taken by the Board of Awards, under Sanitary Contract No. 77, has, it is stated, been awarded to the D'Olier Engineering Company, Philadelphia, Pa.

Wallace Stebbins & Sons note a good demand for mill and machine shop supplies, aggregate orders for which have been larger than during the previous month. They have also booked some good orders for heating equipment, including the installation of a plant in the House of the Good Shepherd, Baltimore. The installation of a complete heating system in the National Park Seminary has been completed. Power transmission equipment is reported fairly active.

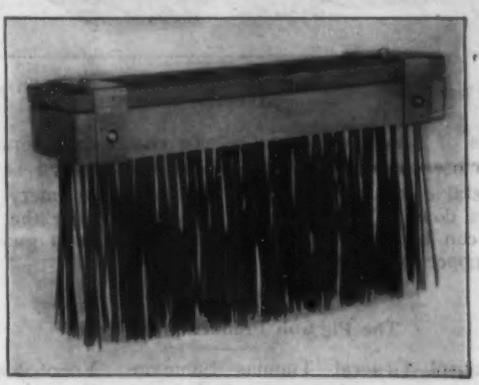
The Monarch Engineering & Mfg. Company notes sales of a moderate amount of special foundry equipment with the demand for oil-burning melting furnaces fairly good.

Crook-Kries & Co. note an increasing demand for heating and ventilating work, as well as power equipment. Recent contracts include three 72-in. x 16 ft. boilers for the Sherwood Distillery, Cockeysville, Md. An order has also been taken for the high and low pressure pipe and pipe fitting work for the high pressure pumping station for the city of Baltimore, while additional heating apparatus for the Southern Building, Washington, D. C., for which this company has the contract, has been ordered, owing to changes in plans of some portions of the building. This company will also install two 100 hp. boilers in the Women's Hospital, and extend the heating system of the Nurses' Home, of the same institution. A large amount of general work is reported, and the estimating department is very busy on a number of new propositions, some of which are of considerable size.

The T. C. Bashor Company has had a particularly active month in power equipment. Among orders received was one for a Skinner engine and a 50 K. W. Fort Wayne generator, direct connected, for the Hotel Caswell. Power equipment including three 150 hp. Bashor boilers, pumps, piping, etc., will be furnished the Industrial & Development Company, Sutton, W. Va. A 75 hp. Bashor boiler and a 50-hp. Nagle Corliss engine are being furnished the A. H. Colmary Company, Baltimore. Considerable tank work is under construction for the Davidson Chemical Company as well as for other purchasers. A fair inquiry for heating and ventilating work is reported, with considerable work of this character under contract. The demand for mill and machine shop supplies is said to be steadily increasing.

New Wire Brush

A new wire brush has been placed on the market by the F. & M. Company, 14 Greendale avenue, Worcester, Mass., employing flat wire together with extra wires at the ends to take brunt of the thrust. The flat wire is oil tempered to take a right-angle bend and each wire is formed before being put into the body. Hard wood, planed



A New Type of Flat Wire Brush Made by the F. & M. Company, Worcester, Mass.

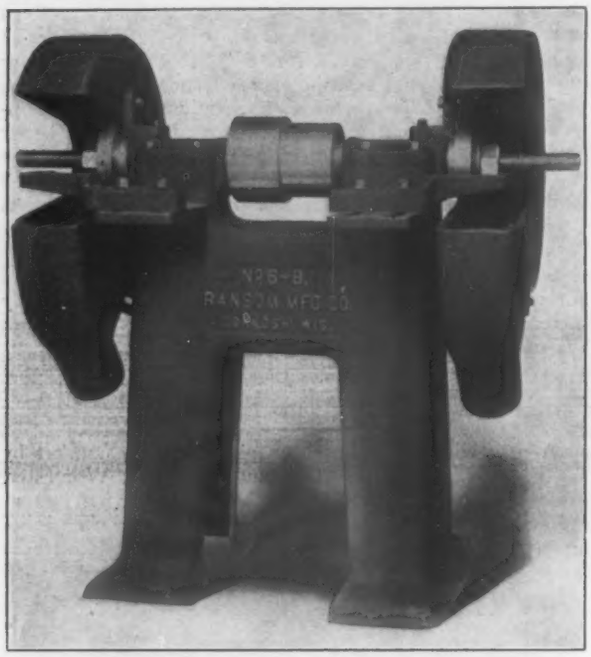
and smoothed, is used for the body and the cover, which are fastened together with two clamps of 1/16x3/64 in. steel forced over and locked on the under side. The ends of the brush on account of the hard service they get have each 24 extra wires to secure greater durability.

Cambria Axles and Forgings

The Cambria Steel Company, Johnstown, Pa., has issued a leather-bound catalogue of 78 pages which treats of steel axles for use on passenger cars, freight cars, tender trucks, engine trucks, driving trucks, electric trucks, street cars, mine cars, etc., and steel forgings intended for general purposes, including crank pins and piston rods. Considerable general information is given regarding the process used by the Cambria Steel Company in manufacturing its axles and forgings, the steel being treated by the Coffin process. The contents include the standard specifications for steel axles adopted in 1905 by the American Society for Testing Materials, also the standard specifications adopted in 1899 by the Master Car Builders' Association. In addition to the standard grades and Coffin-treated axles, the company has adopted a novel and very useful quality of steel axles which it has named Cambria Special, and these have proved very successful under the severe conditions of electric roads and have met with much favor on the largest rapid transit lines. Much space is given to sectional views showing principal dimensions of standard axles and to useful tables for engineers.

Ransom Emery Wheel Guard

Adjustability for wear and the taking care of dust exhaust pipe connections are two special features characterizing the new emery wheel guard that has been placed on the market by the Ransom Mfg. Company, Oshkosh, Wis. The guard is made of steel castings and combines in one the guard for the emery wheel and the exhaust pipe, thus complying with the legislative enact-



A New Guard for Emery Wheels Built by the Ransom Mfg. Company, Oshkosh, Wis.

ments of a number of states. To enable the operator to get close to the wheel at all times the guard is made adjustable so that it can be set back as the emery wheel wears down. When it is necessary to change the wheel this can be done without disturbing the main guard, as the upper plate is made removable.

The Pig Iron Production of Japan

Consul General Thomas Sammons, Yokohama, reports that an estimate supplied by the Department of Finance places the production of pig iron in Japan for 1910 at 71,963 tons, valued at $1,410,685. The average production for the past 10 years has been 50,030 tons, valued at $1,010,529, but the output has been increasing, the figures for 1901 having been 32,455 tons, valued at $602,196. In 1910 Japan imported pig iron to the extent of 117,227 tons, of which 98 per cent came from Great Britain, and less than one-tenth of 1 per cent from the United States. The remainder was divided between China, Sweden, and Germany, in that order. Japan also imports iron ores, 208,191 tons having been received in 1910, with a value of $579,819, of which China supplied 61 per cent, Korea 35 per cent, and Great Britain 3 per cent, the 1 per cent remaining coming from other countries.

Product of Titanium Steels This Year

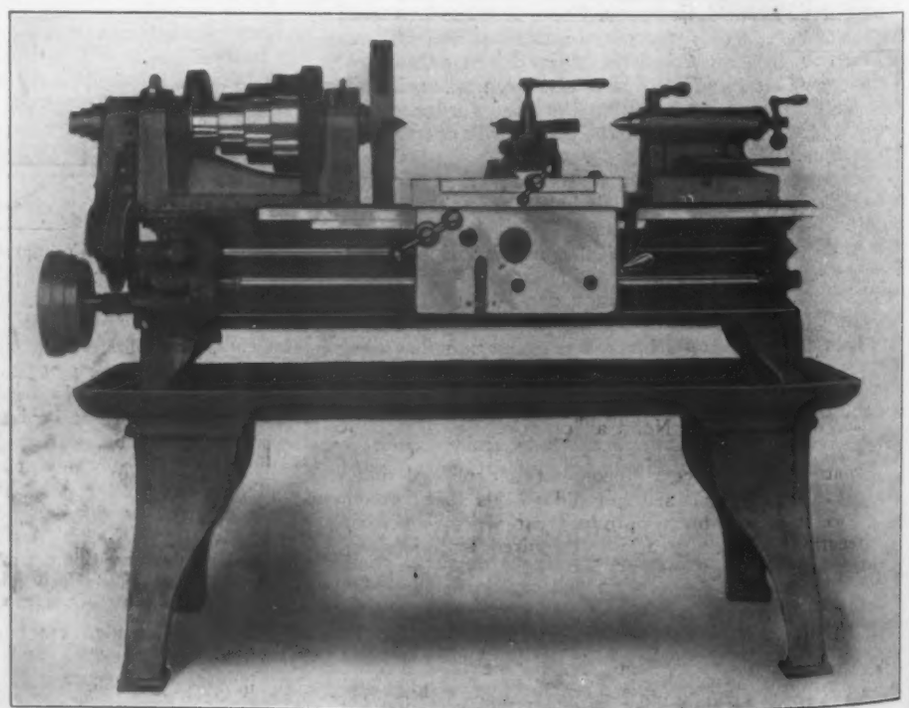
Charles V. Slocum, general sales agent of the Titanium Alloy Mfg. Company, Oliver Building, Pittsburgh, Pa., has made a computation of the exact quantity of titanium alloy ordered from his company by various consumers for the nine months ended October 1, 1911. The total, which excludes all Bessemer business, is 1,089,360 lbs. of alloy. If this alloy was used on the basis of one-half of one per cent. it would represent the manufacture of 108,936 net tons of basic and acid open-hearth steel and crucible steel. As no Bessemer steel business whatever is included, it is claimed that these figures prove conclusively that titanium is proportionately as popular in the higher grades of steel products as it is for rails. If the volume of business in these alloys continues as good to the end of the year a probable output of 150,000 tons of titanium steels will be attained entirely exclusive of Bessemer. The list of consumers comprises 70 names.

Western Steel Corporation Bankruptcy.—The Western Steel Corporation, whose affairs have been before the courts for several weeks, was adjudgd bankrupt at Seattle, Wash, October 27, by United States District Judge Cornelius H. Hanford. This action followed the filing of a stipulation signed by attorneys representing the steel company and the Metropolitan Trust Company of New York, the principal creditor, whereby the corporation withdrew all opposition to the proceedings.

The Miami 14-In. Lathe

A new lathe designed for use in manual training schools, automobile garages and manufacturing plants in general is being built by the Miami Valley Machine Tool Company, Dayton, Ohio. The tool is rated as a 14-in. lathe, with an actual swing of ¼ in. more. The spindle which has a 1 1/16-in. hole through it runs in large phosphor bronze bearings. The carriage has three bearings on the bed, all of which are hand scraped, the third bearing giving additional strength to the cross bridge which is heavily ribbed.

In the accompanying engraving the lathe is mounted on an oil pan supported by four legs, but if desired it can be furnished with straight legs without the oil pan. Other changes in the equipment of the tool include a draw-in spindle and collets and a taper attachment which enable the tool to be converted into a high grade lathe for use in the tool room.

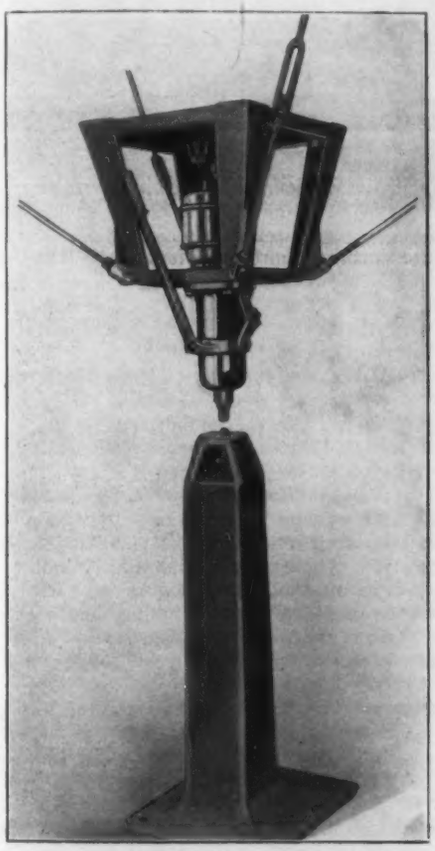


A New 14-In. Lathe for Manual Training Schools and Automobile Garages Built by the Miami Valley Machine Tool Company, Dayton, Ohio.

Grant Motor-Driven Ceiling Riveter

For riveting automobile bodies, fenders and other light work of a bulky nature or irregular shape that could not formerly be handled in a machine easily, the Grant Mfg. & Machine Company, Bridgeport, Conn., has recently brought out a motor-driven ceiling rotary rivet spinning machine. The motor is direct connected to the spindle of the machine and is encased in a cast-iron frame, the whole being suspended from the ceiling by tie rods. The pedestal or anvil is bolted in position on the floor, thus permitting the work to be swung around in the most convenient position for riveting.

Unlike the regular single spindle rivet spinners, one of which was illustrated in *The Iron Age*, September 16, 1909,



A New Motor-Driven Ceiling Riveter Built by the Grant Mfg. & Machine Company, Bridgeport, Conn.

and the multiple-spindle machine, an illustrated description of which appeared in *The Iron Age*, January 26, 1911, this machine is operated by a hand lever that is placed in such a position as to be entirely out of the way of the article being riveted, while at the same time the operator has ready access to it. If desired the machine can be supplied with a belt drive in place of the motor drive illustrated.

A charcoal pig iron for chilled car wheels, chilled rolls and gas and steam cylinders has been announced by the Superior Charcoal Iron Company, Grand Rapids, Mich. In addition to the more common grades, it includes No. 3, No. 4, No. 5 and No. 6, and grades No. 3 and 4, it is stated, give transverse tests of 22,000 to 28,000 lbs. per sq. in. and a tensile strength of 30,000 to 38,000 lbs. The grade known as high No. 3 averages 0.56 per cent silicon; the low No. 4 contains 0.44 per cent silicon, and high No. 4 contains 0.35 per cent silicon. It is explained that with the special iron and selected old wheels that have stood service it is possible to produce car wheels of sufficient strength to exceed greatly all required tests without the use of ferromanganese.

C. W. Leavitt & Co., 30 Church street, New York, announce that they are representing the H. H. brand of French antimony, guaranteed 99 per cent. This brand is made by one of the largest refiners in the world, having control of its own mines.

New Standard Gear Cutters

The gear cutting machines shown in the illustrations are new types which have just been brought out by the Standard Mfg. Company, Bridgeport, Conn. They are adaptations of the company's standard machines and are intended for a class of work that is so standard in character as to

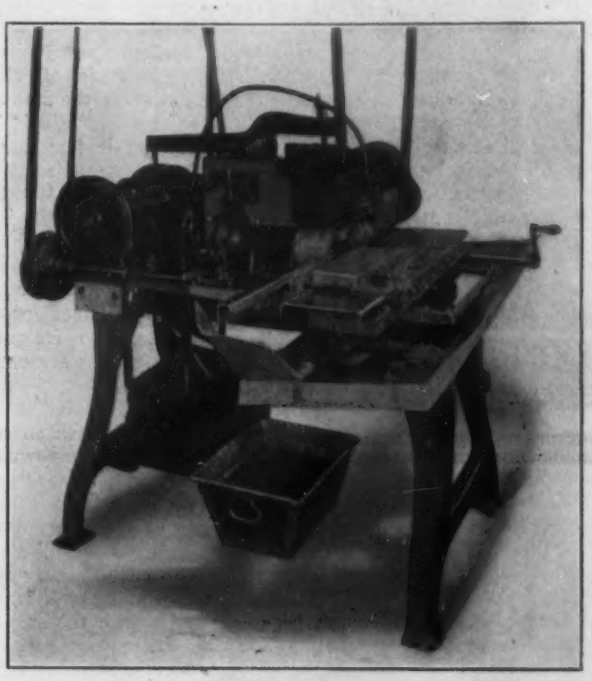


Fig. 1.—A Rack Cutter Recently Developed by the Standard Mfg. Company, Bridgeport, Conn.

take them out of the special class. One, a rack cutter, is illustrated in Fig. 1 and the other, which is a worm cutter, is shown in Fig. 2.

The rack cutting machine, Fig. 1, has a table equipped with power feed and an automatic index and a hand return. It will take work up to 8 in. in width, and will automatically cut racks to 22½ in. in length, and longer if the work is reset to the feed. In common with other machines of the line it will cut both plain and irregular faces. The slide carrying the cutter spindle rises as soon as the cut is taken and clears the blank on the return stroke, indexing at the same time. The travel of the slide which carries the cutter is controlled by an interchangeable cam on the cam shaft, making it easy to change to any length of cut. An automatic stop renders the mechanism idle on the completion of the piece.

The worm cutter as shown in Fig. 2 is arranged to cut a double pitch worm. A master worm in the master worm

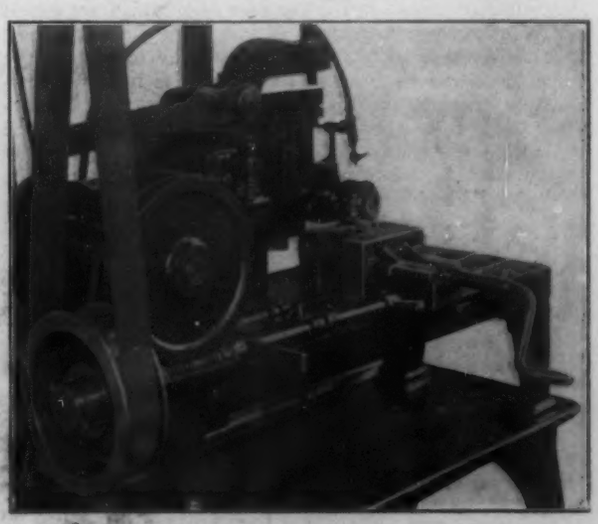


Fig. 2.—The New Worm Gear Cutter.

hub of the feed mechanism controls the course of the work against the cutter, and the amount of feed is governed by the number of revolutions of the work.

Freight Handling in Small Shipments

The Pennsylvania Railroad furnishes the following interesting account of the manner in which it distributes small shipments of merchandise:

It would be too much to suppose that bulky freight will ever be handled as rapidly as are the mails, but through the perfection of methods and facilities—the employment of scientific management in transfer yards—the railroads are aiming toward such rapidity, and at the same time working wonders in economy. A clerical force of 210 and a warehouse force of 249 are kept busy at the transfer station of the Pennsylvania Railroad at Waverly, N. J., where last year over 100,000 cars of freight, in less than solid carload lots, were received, and their contents, sorted into solid carload lots, sent to hundreds of destinations. The result of their labor was a saving of 11,352 cars in the performance of the business, and an incalculable amount of time to thousands of shippers. This station is situated between Newark and Elizabeth. Into it cars are fed from 13 transportation companies, two terminal companies and the docks of New York City, also freight arising in Jersey City and Newark. During rush seasons as many as 700 cars are taken care of in a day.

As an illustration of the working of the transfer system, suppose a car loaded with freight originated in a small town in New York State destined for 15 other towns throughout the United States. The car would be rushed to Waverly, where its contents would be consolidated with other shipments to the same 15 towns, or to another transfer near those that were too small to command a solid car from Waverly. The freight that is handled in this way is called preference freight, and the trains that carry it run on schedule with the same precision and almost the same speed as passenger trains. The transfer platforms at Waverly afford standing room for 212 cars. On certain tracks the outbound cars are lined up empty. The loaded inbound cars are ranged on the opposite sides of the platforms and their contents are transferred to about 250 cars which are dispatched directly to 121 different points daily.

The system is worked out so well that the transferring is carried on with the greatest precision and celerity. Beside each outgoing car there is a number and a box containing tickets bearing the same number. The checkers in charge of unloading are provided with waybills for each piece of freight. They also have a chart showing the positions of the outgoing cars and their numbers, which represent the places they are to be sent. As the articles are removed they are checked off on the waybills. The checker then turns each piece over to a truckman together with a slip of paper on which the number of the car that is to receive it is written in pencil. The latter, when he has deposited it, takes one of the tickets out of the box. This should bear the same number as the one given to him by the checker and he is required to bring them both back to show that he has made his delivery at the right place. Waybills are made out for the new cars, which are pulled out to make room for others as fast as they are complete.

This is the work that is performed by the warehouse force, but the clerical end of the business is far more complicated. Besides the waybills, of which 3500 are sometimes made in a day by a force of 52 clerks, there is the accounting to be done. Divisions of earnings and settlements must be made with 15 outside companies. The method of keeping track of what the company owes to and what is owed by the other companies for handling freight is similar to that employed in a clearing house. In addition to the warehouse force, which is occupied directly with the transfer of freight, eight distinct departments are required to look after the details of the transference. There are a Pennsylvania Railroad accounting department, a Union Line accounting department, separate departments for east and westbound waybills and card records, a tracing department and a transfer record department.

The Waverly transfer was opened in September, 1904. At first it was planned to handle only the freight from the New York, New Haven & Hartford and the Long Island railroads. Its capacity was 96 cars. After six weeks it became necessary to employ day and night shifts to keep up with the business. The station was soon enlarged to accommodate 200 cars, and later its capacity was increased to 212. Illustrative of the transfer's rapid growth is the fact that the tonnage for less than carload lots has increased nearly twofold from 1905 to 1910, and the total tonnage has more than doubled in the same period. The number of inbound and outbound cars has grown in like proportion. The difference between the number of inbound and the number of outbound cars represents the saving made by handling the freight in solid carload lots. This difference amounted to 10,872 cars in 1905 and 11,352 in 1910.

That greater economy in the matter of car mileage is being generally practiced by the railroads is indicated by the increase in average load per car received at the transfer, which was from 5.67 tons in 1905 to 6.33 tons in 1910. Of course these figures also bear some relation to increased business, which makes it possible to load more heavily. From the beginning there has been a great saving in all mileage at the transfer, the outgoing cars carrying an average load of 6.44 tons in 1905 and 7.42 tons in 1910.

Canton Industrial Notes

Manufacturers of sheet metal products in Canton, Ohio, report a moderate demand for ceilings, roofing and other products used in building lines and a good demand for metal filing cases and furniture. Some of the manufacturers are devoting more attention to the latter lines than formerly. The demand for sheet metal forming machinery is quite active. The increased demand for special high grade sheets for automobile stock, metal furniture and other products has led some of the Ohio sheet mills to specialize more on sheet specialties and some mill extensions are being planned to provide a larger output in high grade sheets for special purposes.

The Canton Sheet Steel Company will enlarge its plant by the erection of an extension 60 x 140 ft. to its mill building and an addition 40 x 150 ft. to its wareroom. A new hot mill will be installed and four stands of cold mills, making six hot mills in the plant and 12 cold rolls. The new train will be motor driven. A motor of about 500 hp. will be installed for that purpose. The new equipment will be provided for cold rolling fine finished sheets for metal furniture and automobile stock. It is expected that the additional capacity will be ready for operation by January 1.

The Canton Mfg. Company has received a $15,000 contract for installing its fireproof metal windows in four buildings of the new plant of the Larkin Company, Buffalo, N. Y.

The Union Metal Mfg. Company is building an extensive addition to its plant to be used in the manufacture of a new line of products to be brought out shortly. These will include inside fixtures for houses, store fixtures, interior columns for houses, churches and lodge rooms, lighting fixtures for houses, window trimming fixtures for stores, ornamental lamp fixtures for entrances to buildings and kindred ornamental metal products in enameled steel and bronze. Ovens for baking enamel and lacquer will be installed in the plant extension.

The Berger Mfg. Company recently acquired a 130-acre site adjoining its plant, on which it expects to erect a blast furnace and steel plant, the purpose being to supply the adjoining plant of the Stark Rolling Mill Company with sheet bars. According to the present plans the erection of the new plant will not be started until 1913.

The Canton Foundry & Machine Company has recently added some new equipment and during the coming year it expects to double the capacity of its machinery department. The company reports a good demand for sheet metal forming machinery. Shipments have been made recently to Manila, Australia and Germany, and some other foreign inquiries are pending. Its machinery department is being operated overtime.

The Canton Corrugating Company, recently incorporated, will build a plant for corrugating sheets and for the manufacture of roofing, siding and other sheet metal products. A site for a plant has been secured near the plant of the Canton Sheet Steel Company. C. A. Irwin, of the latter company, and Wheeling, W. Va., men are understood to be interested in the new company.

The purchase of the plant of the Royal Foundry Company, Canton, by Carl E. Geschwind and Henry Greenwald, Youngstown, Ohio, is announced. The building may be sold and the equipment moved to Youngstown.

Oldham Riveting Hammer

A novel valve construction and impossibility of short-stroking are two special features of a new longstroke riveting hammer recently developed by George Oldham & Son Company, Frankford, Philadelphia, Pa. Fig. 1 shows the exterior of the hammer, while Fig. 2 is a sectional view showing the valve construction.

The valve mechanism, which is located entirely at one end of the cylinder, allows for a heavy valve with large bearing surfaces. The cup-shaped valve moves in the same direction as the piston or the hammer, which, it is explained, is different from most riveters, since the valve

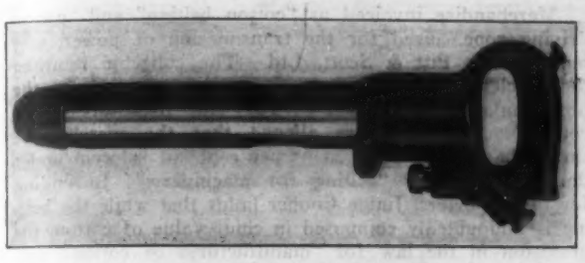


Fig. 1.—The Longstroke Riveting Hammer Made by George Oldham & Son Company, Frankford, Philadelphia, Pa.

and the piston usually move in opposite directions. It is pointed out that as a result air will not leak into the compression chamber, and pressure will not be dissipated, thus causing the tool to short stroke, due to the valve changing the direction of its motion earlier than it should.

When the hammer is traveling backward the valve is held down by its own weight together with the air pressure on a large area in the rear of the valve, the combination tending to prevent the valve from reversing earlier than it should. The piston is shot back with enough force to overcome the weight of the hammer and the pressure of air on the valve, and when the piston enters the latter it will trap a body of air within the imperforate cup-shaped valve and compress it, thus forming a cushion. In this way the valve and the piston travel backward in unison, because of the momentum of the latter, until the valve reaches the limit of its stroke. In addition to making short stroking impossible this construction is said to reduce the vibration to a minimum.

Another feature of the hammer is the novel device employed for preventing the handle from working loose. This clamp relieves the handle from all strain and keeps it from moving and if broken or mutilated it can be readily replaced at a nominal expense.

Three sizes of hammers are made for riveting, the maximum rivet diameters being ¾, 1 and 1½ in. The length of these three sizes are 18½, 20½ and 21½ in. respectively, and the weights are 21¼, 23¼ and 25 lb.

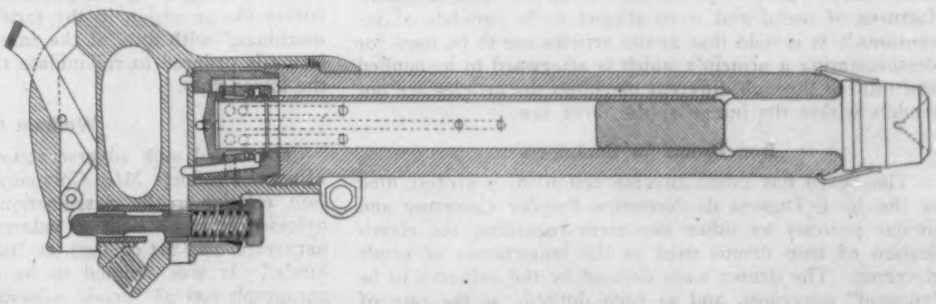
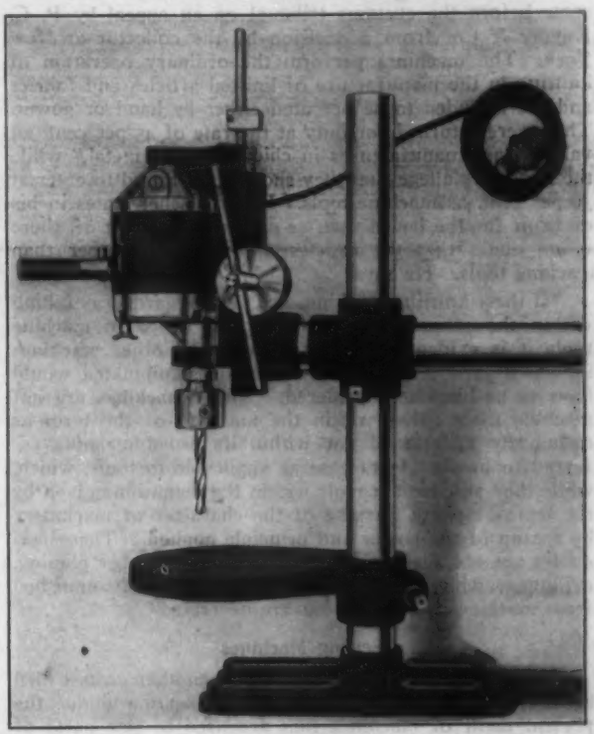


Fig. 2.—A Sectional View of the Hammer, Showing Its Construction.

Self-Contained Sand-Blast Machinery.—Sand-blast tumbling barrels and sand-blast machines of a large range of types, made by Vogel & Schemmann, Kabel in Westphalia, Germany, may be obtained in this country through their recently appointed United States representative, the Wiener Machinery Company, 50 Church street, New York City. The sand-blast tumbling barrels and the other forms of sand-blast machines are noteworthy for their self-contained character, many of the designs comprehending a unit which may be placed at any point in a shop and which does not require a special department, but is designed to run dustless. According to the character of the work, the table on which the material is placed for cleaning may be of a rotary type or of the sliding type, and the materials are carried within the machine enclosures. Arrangements are of course provided for using the sand over and over again.

Drill Converting Attachment

For converting hand or breast drills into bench drills when desired the Hisey-Wolf Machine Company, Cincinnati, Ohio, has placed on the market a new attachment which can be used in connection with any alternating or



A Hand Drill Converted into a Bench Machine by the New Attachment Made by the Hisey-Wolf Machine Company, Cincinnati, Ohio.

direct current, hand or breast, screw feed or heavy duty drill up to ⅞-in. capacity, and as can readily be seen the range of work possible with the tool and consequently its value are increased.

The cross arm and the column are made of steel tubing. Lever feed and a quick return by hand are regularly furnished, although if desired a wheel and worm feed can be substituted. The cross arm has both horizontal and vertical adjustment and a radius of 24 in. in all directions at any angle. The table is adjustable, both vertically and horizontally, on the column. The drill is fastened rigidly to the slide on the cross arm by brackets and since the caps are easily removed the drill can be readily detached and converted into an ordinary hand or breast drill.

The attachment is made in two sizes, the first or No. 1 size handling drills up to a maximum diameter of ½ in., while the No. 2 size is for drills of from ¼ to ⅞ in. The following table gives the principal dimensions and specifications of the two sizes:

	No. 1.	No. 2.
Travel of slide, in.	7	9
Distance from base to top of column, in.	26	29
Diameter of table, in.	10	12
Weight, lb.	70	95

The American Hoist & Mfg. Company has removed its establishment from Hamburg to Lock Haven, Pa., owing to the necessity of enlarging its manufacturing facilities to take care of its increased business.

Customs Decisions

Knitting Machines

The Board of United States General Appraisers has decided that knitting machines are not "machine tools" within the meaning of the tariff act of 1909. The issue came before the customs tribunal on an appeal by P. C. Kuyper & Co. from a decision by the collector at New York. The machines perform the ordinary operation of knitting in the manufacture of knitted articles and fabrics and are intended to be operated either by hand or power. They were returned for duty at the rate of 45 per cent. ad valorem as "manufactures in chief value of metal," while the importers allege that they should be allowed to enter at 30 per cent. as machine tools. Judge Fischer states in his decision for the board that, as commonly spoken of, there is no doubt that the articles are machines rather than machine tools. He says:

"If these knitting machines are to be regarded as falling within the common understanding of the term machine tools it is evident to us that looms and other machines in which yarn or thread is woven or manipulated would have to be likewise considered. These machines are not machine tools either within the meaning of the term as technically understood nor within its broad meaning referred to in the Myers case as applicable to tools, which, while they still remain tools within the definitions given by the lexicographers, partake of the character of machinery by reason of the power and principle applied. These machines are not such as are used in workshops for planing, drilling, sawing, etc., nor are they tools as distinguished from machines. The protests are overruled."

Sewing Machines

The board took favorable action on another protest filed by Kuyper & Co. regarding the classification under the present tariff of machines that are used to sew parts of knit articles together. They were assessed at 45 per cent. under the metal paragraph and were claimed to be dutiable properly at 30 per cent. as sewing machines. This claim the board sustains and reverses the collector.

Hydraulic Motors and Pumps

A. K. Baylor failed to have his contention sustained for the free entry of hydraulic motors and pumps for use on motor cars. They were assessed at 45 per cent. as manufactures of metal and were alleged to be "models of inventions." It is held that as the articles are to be used for demonstrating a principle which is afterward to be applied and utilized through different machines the articles are not models within the intent of the tariff law.

Iron Drums for Containers

The board has taken adverse action on a protest filed by the E. I. Dupont de Nemours Powder Company and similar protests by other importers regarding the classification of iron drums used in the importation of crude glycerine. The drums were deemed by the collector to be "unusual" coverings, and as such dutiable at the rate of 35 per cent. ad valorem. It was claimed by the importers that the drums are the usual containers of free goods, and should be granted free entry. This claim is denied by Judge Fischer, who writes the opinion for the board.

Steel Rolls for Calico Printing

Alfred de Liagre failed to convince the board that lower duty should accrue on steel pattern rolls or dies used for the purpose of sinking patterns on copper rollers for producing printed effects on calico. The pattern for printing has been cut on the steel rolls or dies, and these act as models or patterns from which the copper rollers for printing are made. Duty was assessed as "manufactures of metal," at 45 per cent. ad valorem, whereas the importer asked for a lower rate under the provision for "plates" engraved for printing. The board holds that pattern rolls or dies are not plates within the meaning of the tariff.

Tin Cans

The board has taken adverse action on protests filed by Davies, Turner & Co., and others, regarding the classification under the tariff act of 1909 of boxes, canisters, and other receptacles, either made of metal lacquered or of metal printed by the lithographic process. Duty was separately assessed on the metal coverings under paragraph 195, as unusual coverings. It was claimed that they are free of duty or subject to the same duty as their contents as the usual coverings or containers of the merchandise imported. Judge Fischer says that the metal coverings are not hermetically sealed and are not, therefore, within the excepting clause of paragraph 195. The decision says that paragraph 195 specifically provides for the articles in controversy, and that the terms of the paragraph requires that they be held dutiable under that provision. The claims are overruled.

Cotton Belting

Merchandise invoiced as "cotton belting" and "cotton driving rope," used for the transmission of power, was imported by Pitt & Scott, Ltd. The collector returned the articles for duty at the rate of 45 per cent. under the provision in the tariff act of 1909 for "manufactures of cotton." The importers alleged that the merchandise should be granted entry at 35 per cent. ad valorem under the paragraph for "belting for machinery." In finding for the importers, Judge Cooper holds that while the belting is undoubtedly composed in chief value of cotton, the provision in the law for "manufactures of cotton" cannot control in this case. He holds that the use of an article must decide its classification.

Toy Sewing Machines

The board has overruled a protest filed by Butler Bros. regarding the classification of so-called toy sewing machines. It appears that the machines are not practical sewing machines and are intended for the use of children. They were returned for duty at the rate of 35 per cent. under the provision in the present tariff for "toys." The importers maintained that the articles are in fact the regular sewing machines specified in the present law. The protests are denied and the collector affirmed.

Knitting Machines

The board has decided a controversy between the government and E. O. Spindler regarding the classification of knitting machines in favor of the importer. They were returned for duty by the collector at New York as "manufactures of metal," at 45 per cent ad valorem. It was successfully alleged by the protestant that the machines fall within the provision in the tariff act of 1909 for "sewing machines," with duty at the rate of 30 per cent. The collector is ordered to reliquidate the entries on the basis of the lower duty.

Wolfram Ore

The board took adverse action on protests filed by the Mineral Products Mfg. Company, and O. G. Hempstead & Son, relative to the classification of wolfram ore. It was assessed at 10 per cent ad valorem under the provisions of paragraph 190, act of 1909, as "tungsten-bearing ores of all kinds." It was claimed to be exempt from duty under paragraph 626 as "crude minerals not specially provided for." The collector's classification is affirmed.

Sheet Steel Cask Linings

The board took adverse action on protests filed by several importers asking that thin sheet-steel coverings in the form of drums, which serve as the inside lining of wooden casks, be regarded as the "usual" coverings for merchandise. They were returned for duty at the rate of 30 per cent as "unusual" coverings. The collector's assessment is affirmed. The importers affected include the Smith, Kline & French Company, Geisenheimer & Co., O. G. Hempstead & Son, and others.

Automobile Tire Bolts

The board has taken adverse action on protests filed by the Dubied Machinery Company and Michelin Tire Company, in cases affecting the classification of so-called security bolts. They are employed for holding automobile tires firmly in place on the rims of the wheels. Duty was imposed at 45 per cent, either as manufactures of metal or as parts of automobiles. The contention was that the articles are "bolts" within the meaning of paragraph 144 of the existing law. Under this claim the duty is 1⅛ cents a pound. Judge Fischer denies the claim.

The Machinery Markets

The railroads are placing a good volume of scattered orders for machine tools for early delivery. The New York, New Haven & Hartford has come forward with a list calling for $50,000 worth of equipment. Most of the railroad activity is in the East. Philadelphia dealers received orders against a $15,000 list during the week and some business is pending there for small lots of machinery, although the competition is sharp. In Cleveland inquiries have improved and makers of metal products are the principal buyers, while the automobile trade is placing some orders. Contractors' equipment and second-hand machinery for railroad construction work have the call in Cincinnati. General conditions have improved in St. Louis, although the buying is limited to single tools. In Detroit a number of automobile companies are developing plans for extensive additions and small manufacturers in general are becoming more active. Business is generally quiet on the Pacific coast, but better than it was a year ago. The logging industry is looked to for some trade in that market. Power equipment, wood-working equipment and contractors' outfits are in principal demand in the South and the situation is encouraging.

New York

NEW YORK, November 1, 1911.

The railroads are attracting attention in the machinery trade. The event of the week was the appearance of a list from the New York, New Haven & Hartford covering extensive requirements which it is said will be installed in shops to be built at New Haven. The list calls for expenditures amounting to fully $50,000, and it includes a number of large lathes, planers, shapers, other machine tools and an assorted list of shop equipment. The Delaware, Lackawanna & Western has been doing some scattered buying and the New York Central closed orders for a few tools during the week. The buying done by the Delaware & Lackawanna, it is understood, is only preliminary, as a large list is now in course of preparation covering that company's 1912 shop needs. The Lehigh Valley is inquiring for machine tools and the character of the requests for bids indicates that it will soon prepare a list. Inquiries from various other railroad sources demonstrate that the carrying companies are taking a more active interest in their machinery requirements. Car and locomotive builders have also developed as good customers of machine tools of late and most of the purchasing coming from that direction is for replacements. Automobile truck manufacturers are buying good round lots of machinery. There are inquiries now in this market from the Autocar Company, Ardmore, Pa., which it is reported will spend about $10,000 for machine tools. In this column last week the W. A. Wood Mowing & Reaping Machine Company, Hoosic Falls, N. Y., which has been buying equipment, was misnamed as the W. H. Atwood Company. A number of New York machinery houses have figured up their October receipts in orders and find that month's business was decidedly better than were August or September. The export business continued strong and some good round lots of metal working machinery have been sold for delivery to Canadian manufacturers. Export agents who represent the German and Italian trade continue good customers for American machinery.

The Henry Mfg. Company has been incorporated with $100,000 capital stock, to manufacture an automatic device for starting gasoline engines. The company has temporary quarters at 141 West Fifty-first street, New York, and is having plans prepared for a factory of larger dimensions in the near future. The affairs of the company are in the hands of William F. Mohr, 33 New street. Associated with Mr. Mohr in the enterprise are George L. Henry and Charles W. Caffry.

The new plant which the Otis Elevator Company is to erect at Twenty-sixth street and Eleventh avenue, New York, will be 100 x 197 ft., seven stories, and is estimated to cost $400,000. Clinton & Russell, 32 Nassau street, are the architects.

The Bloomfield Chemical Company has acquired a tract of land at Cleveland and Passaic avenues, Harrison, N. J., where it is planning to erect a new factory for the manufacture of chemicals. The estimated cost of the building is $5,000.

The Salamanca Furniture Company, Salamanca, N. Y., recently mentioned as having a new plant in course of erection, will be in the market soon for planers, molders, shapers, band saws, dovetailers, resaws, heater, warming system and power equipment.

The Ideal Wrapping Machine Company Middletown, N. Y., has had plans prepared for a small factory for the manufacture of wrapping machines and light-running machinery. Work will soon be commenced and the plant is expected to be completed about January 1, when bids for the machinery will be taken.

The Myers Loading Machine Company, Buffalo, N. Y., has been incorporated with a capital stock of $100,000, to manufacture special machinery. Geo. F. Myers, Wm. S. Harrison and John K. Kerr, Buffalo, are the incorporators.

The Frontier Cut Glass Company, Buffalo, has been incorporated with a capital stock of $10,000, and will engage in the manufacture of cut glass. The directors are Joseph and C. B. Warner of New York City, Herbert W. Morris, Jno. W. Murray and Fred C. Howard, Buffalo.

The Buffalo Dehn Company, Buffalo, has been incorporated to manufacture fine wire novelties and specialties, including some patented articles. A factory will be established for which specially constructed wire-working machinery will be required. The company has offices in the White Building. The directors are Bradley Goodyear, president; Bainbridge D. Folwell, vice-president; Geo. H. Field, secretary and treasurer; Martin Dehn, managing director, and Edward H. Letchworth.

The Fleishman Malting Company, Buffalo, is building a heating plant addition, one story, to its extensive malting plant at Niagara street and the Niagara River branch of the Erie Railroad.

John K. Stewart & Sons have been incorporated at Amsterdam, N. Y., to manufacture textiles, with a capital stock of $300,000. The incorporators are John K., C. D., and S. S. Stewart.

The branch foundry to be located at Oneida, N. Y., by the National Foundry Mfg. & Supply Company, of Williamsport, Pa., will be known as The Oneida Foundry Company. It will be incorporated under the laws of the State of New York and operated as a general jobbing foundry. The moulding room will be 50 x 154 ft., and there will be a cupola house, coal and coke sheds, etc. Boiler, engine, generator and motor equipment have been provided for, as well as line shafting; but the new company will be in the market for a cupola, elevator, fan and casting cleaning machinery.

The H. O. Craven Mfg. Company, Schenectady, N. Y., has recently been incorporated with a capital stock of $50,000, and will engage in the manufacture of carbureters for gasoline engines. Horace O. Haven, Joseph A. Field and Geo. W. Dounan, Schenectady, are the directors of the new company.

A one-story pottery manufacturing plant, 100 x 200 ft., is to be built at Lafayette, N. Y., by Lesseer & Schwartz, 34 Morris street, Jersey City, N. J.

The Groton Bridge Company, Groton, N. Y., has received a contract from the Gray Chemical Company, Port Allegheny, Pa., for the erection of a chemical factory building, 96 x 86 ft., one story.

The General Automatic Company, Syracuse, N. Y., has been incorporated to manufacture automatic cash registers, etc. The capital stock of the company is $250,000, and the directors are C. B. Cory, E. J. Richardson and W. S. Barlow, of Syracuse.

A six-story addition, 52 x 180 ft., is to be made to the Remington Typewriter Works, Ilion, N. Y., and work upon it has been commenced. The cost will be about $75,000.

THE MACHINERY MARKETS

The Hoosier Sales Company, Jamestown, N. Y., has been incorporated with a capital stock of $150,000, and will build a plant in that city for the manufacture of electrical goods and appliances. The incorporators are Frank L. Wyman, Indianapolis, Ind., and Scott H. Penfield and Benj. S. Dean of Jamestown.

The Erie Pump & Engine Works, Erie, Pa., has been incorporated by J. G. Pradt, Milton W. Shreve and D. H. Dumond, and will establish its plant in Erie. The capital stock of the company is $50,000.

Business Changes

The United Machinery Company has recently removed from 136 Liberty street to 88 Center street, New York. The company has a large store and will display a number of prominent lines of wood and metal working machinery. Catalogues and price lists from manufacturers of machine tools and supplies are desired.

New England

BOSTON, MASS., October 31, 1911.

The month cleaned up larger totals of business for the dealers than they had anticipated, the extreme dullness of the opening week proving no criterion of what was to come. The year's business to date is behind that of 1910, but the shrinkage has not been so great as had been expected, if the autumn was to bring no marked improvement. The machinery builders report conditions as unchanged. A continued improvement in the textile industry, both cotton and woolen, promises to have indirect results on business in the near future and direct results later, when the textile machinery builders will feel it, to the relief of their present stagnant market.

The United Shoe Machinery Company, Beverly, Mass., has no list out for the equipment of the new buildings recently completed, and the trade presumes that there will be some delay in going ahead with improvements until matters have been adjusted in relation to the litigation involving the company as an alleged trust. The shops are running on full time, and the presumption is that the new equipment will be needed to take care of the natural increase of business which must come with improvement in the shoe industry.

The Abbott Ball Company, Hartford, Conn., manufacturer of steel balls for burnishing metal goods and of the Abbott tumbling barrel for use with steel balls, will erect a factory at Elmwood, a suburb of Hartford, 40 x 100 ft., two stories, of brick-and-steel construction. The company will purchase a 25-hp. fuel oil engine, and will require storage tanks of about 12,000-gal. capacity, with two or more open tanks for hardening purposes.

George H. Turner has been elected vice-president of the Coe Brass Mfg. Company, Torrington, Conn., succeeding James A. Doughty, who has retired because of ill health after 25 years' connection with the business. Elisha J. Steele, who has been the treasurer, will assume the duties of the secretaryship and George E. Cole has been made treasurer.

F. W. Derbyshire, Waltham, Mass., has established his shops in the Jenness Building, 157-165 High street, that city. He will manufacture watchmakers' lathes, chucks and attachments, slide rests, wheel cutters, jeweling rests, pivot polishers and special machinery, and will do renickeling.

The Hobach Aeroplane Company has been organized at Waltham, Mass., and is establishing a factory for the manufacture of aeroplanes to order. John Barrows, recently with the aeroplane department of the Metz Automobile Company, Waltham, is the president of the company.

Additions to general manufacturing industry of New England, include the following: Tallyho Knitting Company, East Douglas, Mass., organizing to build and equip a mill to manufacture knit goods; Day Building Trust, Worcester, Mass., five-story factory, 55 x 100 ft., to be occupied as an addition by the New England Envelope Company; Brockton Factory Association, Brockton, Mass., eight-story factory building for rental, to cost $120,000, with the prospect of a companion building in the near future, the first being already rented to a number of concerns; T. K. Earle Estate, Worcester, Mass., addition to building occupied by the American Card Clothing Company, and Bickford & Sweet, 44 x 80 ft., four stories; Hale Piano Company, East Douglas, Mass., to remodel and equip building just purchased of the American Axe & Tool Company in that town.

The fertilizer and shock plant of the Seacoast Canning Company, Eastport, Me., was burned October 20, with loss of $60,000. The plant of the Freiderichs Dyeing Company, Woonsocket, R. I., was damaged $50,000 by fire, October 24.

It is announced that the Matthews Mfg. Company, Seymour, Conn., manufacturer of hardware specialties, will rebuild that portion of its works recently destroyed by fire. One building will be 50 x 125 ft., and a smaller structure will be erected, both of concrete blocks and with steel truss roofs.

A committee of creditors is in possession of the affairs of the C. W. Kelsey Mfg. Company, Hartford, Conn., builder of a type of automobile known as the Motorette, and the effort is being made to reorganize and continue the business.

The Pratt Read Player Action Company, Deep River, Conn., has purchased the business of the Wasle Unique Player Action Company, and will carry on the business of manufacturing pneumatic player actions at Deep River. George L. Cheney is the president and treasurer; Anthony Doll, Jr., vice-president, and W. B. Stevens, secretary.

Philadelphia

PHILADELPHIA, PA., October 31, 1911.

One large list of tools, that of the Frick Company, which has been before the trade for some little time, was closed during the week, involving an aggregate of some $15,000. No other large lists are now reported as being openly before the trade, pending business being confined to small and moderate lots, principally single tools. Competition for such business as is offered is very sharp and in instances price concessions are reported as being made. The demand for metal working tools generally continues irregular, although occasional satisfactory orders for special equipment come out. Manufacturers of the standard types of machine tools report current business as being light, although makers of special machinery have been booking, in some cases, a very fair amount of new work. Builders of special paper mill machinery and equipment have been very busy and have a good volume of orders on their books. Railroad buying has been quiet, no fresh inquiries from the roads in this district being reported. No particular betterment in the demand for power equipment is observed, although a good volume of moderate power equipment is under negotiation. Few orders of importance have been placed with local merchants covering tools or equipment for export, although manufacturers transacting an established business abroad in power transmission equipment report an average volume of business. The second hand machinery trade reports continued dullness in practically all branches. Both iron and steel casting makers find business irregular, occasional betterments are noted, but, as a rule, foundries have but little work ahead and are still operating at an unsatisfactory basis.

The Lanston Monotype Machine Company, which has had the erection of its new plant at Twenty-fourth and Locust streets under consideration for some time, has awarded a contract for the construction of the building to the William Steele & Sons Company. Plans provide for a six-story brick and concrete factory building 176 x 268 ft.

The Hunsicker Engineering Company, Lebanon, Pa., has been organized with a capital stock of $50,000 and will engage in the general foundry and machine business, giving particular attention to car building, furnace and rolling mill work of all kinds. The company will occupy the plant heretofore used by the Lebanon Mfg. Company, operated by the Treadwell Company, now moving to Easton, Pa. The officers of the company are: Harry H. Boger, president; R. M. Rhodes, vice-president; John Hunsicker, Sr., treasurer, and John Hunsicker, Jr., secretary.

The Pennsylvania Street Railway Tie Company has been chartered under the laws of Delaware, with a capital stock of $10,000,000. It will engage in the manufacture and distribution of iron, steel and metal products. The incorporators are F. R. Hansel, Philadelphia, and George H. Martin and S. G. Seymour, Camden, N. J. The organization of the company has not yet been completed and plans regarding its future are not available.

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The Philadelphia Roll & Machine Company reports some heavy shipment of rolls, both chilled and sand cast, with a large consignment of special machinery delivered to a Western buyer. A good demand for charcoal iron air furnace gray iron castings of a general nature, including considerable die work, has been reported.

The Webb Terminal Warehouse Company has awarded a contract to Irwin & Leighton, contractors, for a fireproof brick and concrete warehouse, nine stories, 150 x 160 ft., to be erected at Delaware avenue and Walnut streets. The cost of the building is estimated to be close to $600,000. Work is to be started at once.

The Baldwin Locomotive Works has received orders for 30 freight and 20 Pacific type passenger engines for the New York Central Railroad. Orders have also been received for three engines for the Nashville, Chattanooga & St. Louis Railroad, as well as from industrial concerns, which have been placing orders for single locomotives. The demand for locomotives is not reported as very promising, although this company has sufficient work on its books to keep it well engaged for several months. Plans regarding the addition to its erecting shop at Eddystone, Pa., have not yet been decided.

The Reading Crane & Hoist Works, Reading, Pa., is operating very close to full capacity and with full operating forces. A number of good orders have recently been received, including several from large pulp and paper mills in Canada. Among recent shipments were two 6-ton double I-beam cranes, 47 ft. 6 in. span and overhead tramways for the Crocker-Burbank Company, Fitchburg, Mass.; one 5-ton double I-beam crane for the Georgia Mfg. Campany, Binghamton, N. Y.; one 40-ft. span crane for the Compañia de Santa Gertmudis, S. A., Pachuca, Mexico; one 6-ton, double I-beam crane for the New York and Pennsylvania Company, Lock Haven, Pa.; one 10-ton double I-beam crane for the new power station of the Philadelphia & Reading Railway, St. Clair, Pa., and a braced girder crane 59 ft. 11 in. span. for the Hammerill Paper Company, Erie, Pa.

The Hyde Park Mfg. Company, Hyde Park, Berks County, Pa., has been formed, it is stated, to engage in the manufacture of ball bearing trip hammers and other classes of machinery. Abraham Schlegel, Charles H. Madeira and J. W. Miller, Muhlenberg, Pa., and Adam H. Schmeck, Reading, Pa., are named as directors.

Baltimore

BALTIMORE, MD., October 30, 1911.

Machine tool merchants report fair bookings, although orders have been largely confined to metal working machinery and to single tool propositions. Some few inquiries for moderate quantities of woodworking tools are in sight. A very fair volume of business continues to be taken by manufacturers of special tools and machinery. An increase in the demand for mill and machine shop supplies is pretty generally reported. Business in contractors' equipment shows a decline, due largely to the season. Power equipment has been in better demand, and some very fair orders covering both boiler and engine installations have been closed, with considerable business still under negotiation. Boiler and tank builders, are, for the most part, more actively engaged than they were in September. The local demand for structural material is chiefly for small propositions, although some fair-sized projects are under consideration in the South. Some of the local bridge builders have taken on considerable work for export. The demand for second-hand machinery, tools, etc., drags, and while metal working machine tools have been the most active in this department, transactions are far from being on a satisfactory basis. The railroads continue light buyers, few orders for machinery or tools coming out. The foundry trade is still on an irregular basis. The prospects for any material betterment in general business are not considered very promising, particularly as far as the near future is concerned. Many factors outside the trade still have an important bearing on general business and until these are removed no real improvement is booked for.

F. A. Lazenby & Co., manufacturers of cotton mill machinery, are now established in their recently completed machine shop on Wicomico street, near Beesh street. The new building is 45 x 80 ft., two stories, and fully equipped. This concern is quite busy and has been so engaged for a long period.

Bartlett Hayward & Co. report business as being rather quiet, except in the stove department, which has been particularly active. The projected new machine shop is still being held in abeyance.

The Ellicott Machine Works has taken further orders for dredging machinery and is now operating its plant on comparatively full time. This company recently purchased a plot of ground 147 x 155 ft., adjoining its present plant, not with a view of immediately increasing its capacity, but rather of providing for its possible needs in the future.

The W. F. Assau Canning Company is building a new plant on Boston street, between Patuxent and Streeper streets. Plans are by F. C. Carstens and provide for a brick and stone building, 76 x 173 ft., entirely fireproof. No equipment will be required, as that now used at the company's present plant, 1715-1717 Thames street, which property has been acquired by the city for a recreation pier, will be moved to the new building on its completion.

The Aumen Machinery & Supply Company reports a fair demand for machinery and tools. Individual orders have not been as large as they were last month, sales being confined largely to single tools and more particularly to metal working machinery, although several fairly large inquiries for wood-working equipment are in sight. The supply trade has been particularly good of late and the month's business in that department will exceed that of September.

The Tube Bending & Polishing Machine Company is busily engaged in the manufacture of a number of machines for various customers. The installation of necessary equipment has delayed completion of these machines, but the company's shops are now supplied and will shortly be in full operation. The company also has numerous orders for special automobile parts, which it manufactures.

It is currently stated that the Zimmerman Ice Company, Arlington, Md., has had tentative plans prepared for a one and a half story ice-making plant, to be fully equipped with necessary machinery.

City permits have been granted for the erection of a garage at 1120 Cathedral street for James W. Bowers, from plans by Glidden & Fritz, architects. Plans provide for a reinforced concrete structure, 88 x 120 ft., three stories, entirely fireproof and heated by steam.

Chicago

CHICAGO, ILL., October 31, 1911.

The Chicago Steel Foundry Company, at present located at Nineteenth & Rockwell streets, Chicago, has acquired a piece of property 226 x 298 ft. at Thirty-seventh street and the Chicago & Alton Railway. At this location a one-story foundry building, 150 x 200 ft., and a two-story pattern shop and office building will be erected. David Evans, president, has offices in the Rookery Building.

The Chicago Iron Foundry Company has purchased a lot 121 x 125 ft., improved with a two-story brick building which the foundry company will enlarge.

The Rand-McNally Company, Chicago, has taken out a building permit for a ten-story factory and office building at Fifth avenue and Adams street, to cost $1,400,000.

Curt Teich, manufacturer of postal cards, has obtained manufacturing property with 250-ft. frontage on the northwest side, Chicago, on which a two-story factory building will be erected.

The Chicago & Alton Railroad is considering plans involving the building of a new boiler shop and machine shop and the enlargement of the present facilities at Bloomington, Ill. In connection with the machine tool list recently issued, an expenditure of approximately $200,000 is under consideration.

A. L. King, Chicago, is contemplating the location of a branch foundry at Denver, Colo., for the King Auxiliary Mfg. & Iron Foundry Company. The plans provide for a $150,000 plant, principally for the manufacture of malleable iron products.

The Illinois Watch Company, Springfield, Ill., is planning the erection of a $10,000 addition to its plant.

The Miller Machine Company, Bridgeport, Ill., has been incorporated with a capital stock of $6,000 to conduct a general oil and gas pipe line business, the

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incorporators being Geo. D. Miller, Luella Miller, and R. D. Donnelly.

The Western Steel Car & Foundry Company, Hegewisch, Ill., has taken out a permit to cover the erection of a one-story machine shop, to cost approximately $31,350.

The North Star Machine Works, Crookston, Minn., has been organized with a capital stock of $25,000 by P. S. Houghton, A. P. Clifford, J. Bell De Remer, and M. Houghton, all of Grand Forks.

The Northern Welding & Galvanizing Company, Minneapolis, Minn., will spend $10,000 for a frame addition to its plant.

The R. Fehler Brush Company, Reed street, Milwaukee, Wis., has plans in preparation for the enlargement and remodeling of its factory.

The Rockwell Mfg. Co., Sixth avenue and Park street, Milwaukee, Wis., is planning the erection of an addition to its plant, 120 x 130 ft.

The H. C. Doman Company, manufacturer of gasoline engines at Oshkosh, Wis., has passed from the control of H. C. Doman to Edgar P. & Phil H. Sawyer.

The Gold Medal Camp Furniture Company, Racine, Wis., is taking figures on a new factory building to be 67 x 100 ft., two stories, to cost in the neighborhood of $10,000.

The C. H. Starke Dredge & Dock Company, Milwaukee, has taken out a permit covering the erection of a shop 59 x 72 ft., to cost $16,000.

At Menasha, Wis., a bond issue of $40,000 has been authorized to provide improvements for the city light and water plant.

B. W. King, formerly of Prentice, Wis., is establishing a machine shop at Sault Ste. Marie, Mich.

The Handy Wagon Company, Des Moines, Iowa, is planning an addition to its present plant, to be 300 ft. long.

Cleveland

CLEVELAND, OHIO, October 31, 1911.

While actual sales of machine tools have been light during the past few days inquiries have improved somewhat and a few orders for small lots of tools that have been pending for a short time appear about to be closed. Inquiries are mostly for from single tools to lots of four or five. Business is coming from manufacturers of various metal products who are adding a limited amount of equipment. There is practically no buying by the railroads. Not many orders and only for single tools or small lots are coming from the automobile manufacturers. The demand for second hand tools is rather light. Not many used tools are being offered to dealers.

The Cleveland Welding & Mfg. Company, Cleveland, has been incorporated with a capital stock of $150,000 to engage in the manufacture of automobile rims and various other welded products. The company has secured the plant formerly occupied by the Ohio Brass & Iron Company at 8205 Franklin avenue and expects to have it fitted up and ready to place in operation in 60 days. The company will buy quite a number of standard machine tools to equip a machine shop and will install welding and other special machinery. Officers have not yet been elected, but the company will be under the management of E. I. Heinsohn, who was until recently superintendent of the plant of the Standard Welding Company, Cleveland.

The Massillon Rolling Mill Company, Massillon, Ohio, will shortly begin the erction of a 60-ft. addition to its plant in order to provide additional room that is needed for the manufacture of high grade special sheets. The company is turning its attention more to special sheets and will increase its output of its specialties.

Hess, Snyder & Co., Massillon, Ohio, makers of stoves, ranges, furnaces, pumps, pulleys, etc., have just completed an addition to their foundry, 80 x 120 ft., and has made other extensions and improvements to its plant. A new cleaning department has been fitted up, equipped with a dust arrester built by the W. W. Sly Mfg. Company, Cleveland. Motor drive has been installed throughout the plant, power being furnished by a new 200-hp. generator.

The Massillon Bridge & Structural Company, Massillon, Ohio, which recently acquired a site for a new plant, expects to begin its erection during the coming winter. The plans provide for a fabricating shop 140 x 600 ft. and a power house and office building. Four 10 or 15-ton cranes will be required.

The Carolina Metal Products Company, recently organized at Wilmington, N. C., is erecting a plant for the manufacture of corrugated culverts, ceilings, roofing, shingles, eave trough and other sheet metal products. The officers are Theodore G. Empie, president and general manager; Mears Harriss, secretary, and John F. Kuck, treasurer.

G. F. Mitchell & Son, sheet metal workers, Cleveland, Ohio, will shortly begin the erection of a new plant at Cedar avenue and East Sixty-fifth street in that city. Their present plant is located at 1279 West Third street. The new plant will be 60 x 150 ft., two stories and basement, of brick and steel construction, with the largest amount of glass window surface possible to afford an abundance of light. The new plant will give the concern about three times its present capacity. Its products are dies and stampings and sheet metal parts, automobile parts and accessories. Some new equipment will be purchased, including an 8-ft. power shear, milling machines, shapers, lathes and possibly a generator.

The Rauch & Lang Carriage Company, Cleveland, will enlarge its electric automobile plant by the erection of a four-story brick building, 90 x 30 ft., contracts for which have been let.

The General Foundry Company, Warren, Ohio, has completed its new foundry for the manufacture of steel castings and expects soon to have it in full operation. The plant includes a main foundry building, 140 x 300 ft., an office building and chemical laboratory, pattern building, core room and warehouse.

The Grant-Lees Machine Company, Cleveland, has increased its capital stock from $200,000 to $400,000. Some extensions may be made a little later.

The Burke Machine Tool Company, Conneaut, Ohio, has been incorporated with a capital stock of $20,000 by G. H. Burke and others.

The MacLean Foundry Company, Upper Sandusky, Ohio, has been incorporated with a capital stock of $80,000 by L. H. Hull and others.

Cincinnati

CINCINNATI, OHIO, October 31, 1911.

It is estimated that there are over 40 railroad contractors at work in territory contributory to Cincinnati at the present time, and as a consequence dealers in new and second-hand contractors' equipment have been doing an excellent business. Most of the work being done is double tracking for railroads already in operation.

The situation with machine tool builders is unchanged, although the past week probably brought out a slightly larger number of inquiries. The export trade is reported to be lagging somewhat, but this particular branch of the business cannot be judged by one week's developments.

The steamfitters' strike is not yet settled, and this has affected the sale of small boilers for heating purposes in this territory, but the outside demand for the larger sizes is said to be fairly satisfactory.

The Pollak Steel Company, Cincinnati, recently mentioned as having been incorporated to take over the business of the Block-Pollak Iron Company, is planning a 400-ft. extension to its main shop in Carthage suburb. A number of new tools will be required, including lathes, boring mills, slotters, saws, etc., as well as traveling cranes and a large hydraulic press. The power plant will also have to be increased. A testing department is now being added to be equipped with annealing furnaces and all necessary apparatus for turning out a special brand of heat-treated steels intended particularly for locomotive driving axles and forgings and to meet the requirements of the new specifications adopted recently by the Master Car Builders' Association.

The large factory of J. F. Dietz & Co., Cincinnati, manufacturers of desks, was almost totally destroyed by fire last week. Plans for rebuilding are already under way. Considerable woodworking and other equipment will probably be needed for the new factory. The company's storage warehouse was not damaged.

The Cincinnati Patent Pulley Mfg. Company, Cincinnati, has been incorporated with $10,000 capital stock, by E. W. Kottusch, Adolph A. Gruber, George Berghausen and others. No manufacturing plans have yet been decided upon.

It is rumored that George C. Christlieb, of Wheeling, W. Va., has completed arrangements for the erection of a large brick manufacturing plant at Wells-

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ville, Ohio. The Summit Brick Company, Summitville, Ohio, is also said to be interested in the project.

The H. C. Wood Company, Norwood, Ohio, a Cincinnati suburb, is understood to have plans under way for a $50,000 ice plant to be erected at Wyoming, Ohio.

The Wheeling Mould & Foundry Company, Wheeling, W. Va., has increased its capital stock from $250,000 to $750,000. No information has been given out as to any increase in the company's present facilities.

The Cincinnati Traction Company has taken out a permit to erect a one-story brick boiler house on Keck street, to cost $10,000.

Architects Bert L. Baldwin & Co., Perin Building, Cincinnati, are preparing plans for an addition to the power plant of the Point Pleasant Water & Light Company, Point Pleasant, W. Va. They have also just finished plans for a large factory to be erected by the United States Paper Company, Cincinnati. It is understood that contracts for the last-named job have not yet been placed.

The machine shop addition to the plant of the Bertsch Foundry & Machine Company, Cambridge City, Ind., is well under way, and it is understood that most of the necessary equipment has been purchased. Bert L. Baldwin & Co., Cincinnati architects, drew up the plans for the new structure, which is 100 x 240 ft., one-story, and of mill construction.

The Eddy Auto Company, Cincinnati, has taken out a permit for the erection of a one-story fireproof garage to cost $10,000. It is quite probable that a small repair shop will be installed.

On October 26 fire damaged the Cincinnati plant of the Pittsburgh Plate Glass Company to the extent of about $30,000. Repairs will be begun at once, and new equipment installed in part of the factory.

Hamilton

HAMILTON, OHIO, October 30, 1911.

Taking all of the manufacturing establishments in Hamilton into consideration, it is quite probable that they are ahead of those in other nearby cities, so far as present activity is concerned. Business is not normal by any means, but practically all plants are running full time, and in most lines the prospects are encouraging for the period intervening between the present date and the holiday season.

A report lately issued by the Government Census Bureau gives Hamilton 125 manufacturing establishments, valued at $24,629,000, while five years ago the total valuation was placed at $18,874,000, making an increase of about 30 per cent. during the period named.

The Hooven, Owens & Rentschler Company is now finishing what is claimed to be the largest internal combustion engine ever built. Producer gas will be the fuel used and the engine, which has tandem twin cylinders, 42 x 72 in., is expected to develop 6000 hp. It is to be shipped the Ford Motor Car Company, Detroit, Mich. A large cross-compound steam engine is also being built for the Goodyear Rubber Company, Akron, Ohio, now increasing its capacity.

The Republic Motor Car Company has completed foundations on two factory buildings that will measure respectively 60 x 300 ft. and 80 x 100 ft., both one story and of regular mill construction. Later on the company will be in the market for miscellaneous equipment, including some machine tools, but is not yet ready to consider propositions.

The American Foundry & Machine Company is building an addition to its foundry 100 x 118 ft., one story with monitor type roof, and a three-story pattern and storage shop 30 x 120 ft., all of reinforced concrete construction. All of the necessary equipment has been provided for.

The Mosler Safe Company has just completed a large addition to its plant and all of the equipment has been installed.

Shuler & Benninghofen, owners of the Hamilton Woolen Mills, are completing an addition to their plant in South Hamilton. It is not known whether any equipment will be needed.

The blast furnaces and other property of the Hamilton Iron & Steel Company, at Coke Otto, a Hamilton suburb, will be disposed of at a public sale at noon, December 14. Dudley V. Sutphen, Traction Building, Cincinnati, is trustee in charge of the property. The sale will take place at Coke Otto.

Detroit

DETROIT, MICH., October 31, 1911.

October was a fairly satisfactory month in the local machinery market and reports indicate a continuation of these satisfactory conditions during the coming month. It is thought that a number of automobile companies which have recently begun extensions to their plants will soon be in the market and this is attracting considerable attention from the trade. Inquiries under negotiation are averaging up well and while current business is confined principally to single tools and small lots there have been a few sales on a larger basis. Makers of special equipment are getting a good run of orders. While the demand for second-hand machinery is somewhat spotty, more life is being exhibited in this class of equipment than for some weeks past. Foundries supplying the automobile trade are busy and the demand for small castings is increasing. Sheet metal stamping concerns report an excellent volume of business.

A marked scarcity of small factory buildings has developed here and although the recent completion of two large power buildings has bettered conditions somewhat, still, new concerns desiring to locate in Detroit are experiencing considerable difficulty in securing quarters. Marked improvement in building lines is apparent.

The Boyer-Campbell Company, dealer in small tools, supplies and machinery, will soon occupy its new six-story building at Brush and Congress streets. The company handles the tools of the Brown & Sharpe Mfg. Company and the L. S. Sterrett Company, the taps and dies of the S. W. Card Mfg. Company, the vises of the Reed Mfg. Company, the drills of the Morse Twist Drill & Mfg. Company; reamers, cutters, electric tools, grinders, etc. The officers of the company are W. W. Campbell, president; F. H. Boyer, vice-president and W. C. Brown, secretary.

The Pennsylvania Salt Mfg. Company has announced that it will invest $2,000,000 in enlarging and improving its present plant at Wyandotte, one of Detroit's down river suburbs. The company manufactures chemicals and caustic soda and the new buildings will be equipped with the most modern machinery obtainable for this purpose. Contracts for the erection of the plant, which will be of entirely fireproof construction, have been let. The headquarters of the company are in Philadelphia.

Contracts have been awarded for the construction of a three-story brick addition to the present factory of the Buhl Stamping Company, on Third and Congress streets.

The Flat Rock Mfg. Company has filed articles of incorporation giving its capital stock at $200,000. Dayton Parker, P. F. Hasley and G. Retan are the principal stockholders of the new company, which will erect a plant for the refining of silica near Brownstown, Mich.

Albert I. Jacob and a group of capitalists including W. G. Emerick, Saginaw, and W. M. Durand of this city are reorganizing the defunct Saginaw Bay Southwestern Railway Company and will proceed at once with the construction of the road between Saginaw and Owosso. It is the intention of the company to operate gasoline cars on the new road.

The American Auto Trimming Company, operating three plants in Detroit, has begun construction work on a fourth plant at Walkerville, Ont., across the river from this city. The new factory will be of mill construction, three stories 81 x 252 ft and will be equipped with a sprinkler system.

The Michigan Central Railroad Company has practically completed plans for installing an electric line between Trenton and Grosse Ile, Mich. The plans call for the erection of a large power house and repair shops at Trenton.

The Michigan Steel Castings Company will build a two-story reinforced concrete foundry building and sand bins adjoining its present plant on Atwater street at a cost of $20,000.

The Rouge Valley Wine Company has completed plans for the erection of a brick wine factory on Fort street to cost $20,000 and will probably be in the market for some equipment.

The Excelsior Tool & Repair Company has been incorporated by B. A. Towar, R. H. Freer and H. D. Harley. The capital stock of the new company is given as $7,000.

E. C. Gushwa and E. Schermerhorn have completed

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plans for the erection of an artificial ice plant at Sturgis, Mich. Work on the building, which will cost about $8,000, will be commenced at once.

The Escanaba Pulp & Paper Company has been organized at Escanaba, Mich., with a capital stock of $30,000. The incorporators are W. S. King, P. L. Utley and J. J. Cleary. A pulp mill is now being built and it is planned to eventually construct a paper mill also.

The shops of the Pere Marquette Railway Company at Ionia, Mich., will be extensively enlarged in the near future.

The Escanaba Mfg. Company, Escanaba, Mich., maker of woodenware, is having plans prepared for an addition to the present plant. The addition will be of brick 160 x 200 ft. in dimensions.

Herman A. Miller and I. J. Coffin are promoting the establishment of a flax mill at East Tawas, Mich.

The plant of the Stimpson Scale Company, Northville, Mich., has been sold at receiver's sale to a Toledo syndicate headed by J. W. McMahon. The new owners are not yet ready to announce their plans.

A new company has been organized at Lansing, Mich., under the style of the Auto Electric Gas Lighter Company. The capital stock is given at $3,000.

The Marquette Motor Company, Saginaw, Mich., is planning considerable improvements to its plant, including the installation of a heat-treating department and the purchase of a 200-hp. boiler. The company is now engaged in moving machinery into its new manufacturing building.

The Campbell-Wayant-Cannon Foundry Company, Muskegon Heights, Mich., has completed plans for the construction of a large addition to its foundry. The new building will be 65 x 196 ft. in size, and of brick construction. The company which makes motor castings and is a jobber in chilled iron and semi-steel reports an excellent volume of business.

The Welch Motor Car Company, Pontiac, Mich., will begin work at once on an addition to its factory 40 x 100 ft. to be used as an assembling room. A boiler house will also be erected and a number of other minor improvements made.

The Sanitary Slicing Machine Company has been organized at Grand Rapids, Mich., with a capital stock of $5,000 to manufacture meat-slicing machines and butchers' supplies. The stockholders include C. L. Rood, A. S. Davis and E. A. Rood.

The American Brass & Iron Company, Detroit, has under construction a new factory building at Crystal and Trombly avenues.

The Michigan Steel Casting Company, Detroit, is expending $20,000 for a reinforced concrete steel addition to its foundry.

Plans are being formulated looking to the consolidation of Gaar, Scott & Co., Richmond, Ind., and the Advance Thresher Co., Battle Creek, Mich., with the M. Rumely Co. of La Porte, Ind.

The Acme Electric Heater Company, Detroit, has been issued a permit for the erection of a $4,000 factory building in that city.

The Detroit Insulated Wire Company, Detroit, will build a factory building at a cost of $6,500.

The Home Interior Finish Company, Holland, Mich., has bought property adjacent to the Pere Marquette Railroad on which factory buildings are already erected but which will be greatly enlarged by the new company.

Indianapolis

INDIANAPOLIS, Ind., October 31, 1911.

The Indiana Gas Engine Company, Indianapolis, has been incorporated with a capital stock of $25,000 by G. G. Westerfield, I. W. Connaty, S. S. Brewer, Bernard Korbly and C. A. Korbly.

The Halton Powell Company, Indianapolis, has been incorporated with $20,000 capital stock, to manufacture furniture. The directors are E. W. Bassett, F. B. Moreland and B. Denny.

The Holland Specialty Company, Indianapolis, has been incorporated with $10,000 capital stock to manufacture medical and dental supplies. The directors are M. J. Holland, E. Mattingly and F. J. Carter.

The General Floor Dresser Patents Company, Indianapolis, has been incorporated with $10,000 capital stock to manufacture floor dressing machinery. The directors are A. A. Welsh, G. Dixon and J. N. Ward.

The Hose Lightener Company, Indianapolis, has been incorporated with $30,000 capital stock to manufacture hose lighteners, couplers and similar devices. The directors are J. L. Drake, F. L. Meier and B. M. Drake.

The Greeman Bros. Furniture Mfg. Company, Lawrenceburg, Ind., has increased its capital stock from $75,000 to $150,000 and has begun the enlargement of its plant.

The Kehoe Light & Power Company, Ft. Wayne, Ind., has been incorporated with $100,000 capital stock to furnish electric current. The directors are T. J. Kehoe, C. M. Niezer and M. J. Kehoe.

The Whitesides Commercial Car Company has been organized at New Castle, Ind., with $31,250 capital stock to manufacture auto trucks and auto parts. The directors are F. N. Whitesides, O. C. Saffert and O. O. Carpenter.

The American Bridge Company, now employing 1200 men at its plant at Gary, Ind., has received enough orders to make necessary the doubling of its present production.

The City Council of Sullivan, Ind., has granted a 25-year franchise for a waterworks system to E. M. Kerlin, of Vincennes, Ind.

The Kuhlman Electric Company, Elkhart, Ind., has increased its capital stock from $10,000 to $50,000 and has issued in addition $20,000 of preferred stock.

The Western Supply & Wrecking Company, Bluffton, Ind., has been incorporated with $35,000 to deal in oil and gas well supplies. The directors are J. F. Harris, T. R. Hoskins and T. Flynn.

The Kokomo Brass Works, Kokomo, Ind., has increased its capital stock from $50,000 to $100,000.

The Kokomo Electric Company has increased its capital stock from $25,000 to $150,000.

The Fort Wayne Auto-Motor Company, Fort Wayne, Ind., expects to increase its present plant and install additional machinery.

Plans are maturing for the incorporation of the Sibley Stove Company with a capital stock of $50,000. The company will locate in a plant already built at South Bend, Ind.

The La Porte Radiator Company, La Porte, Ind., is organized with a capital stock of $100,000 and has as directors A. J. Rumely, Emmet Scott and G. P. Wilkins.

The D. J. Jenkins Glass Company, formerly of Kokomo, Ind., is to be removed to Whiting, Ind., where employment will be given to 400 people.

The South

LOUISVILLE, KY., October 31, 1911.

Business with machinery manufacturers and dealers is improving. Definite reports from leading interests indicate that trade is considerably ahead of the record of this time last year. Prospects are encouraging, so that the rest of 1911 ought to continue to be above the 1910 standard. Power equipment, wood-working machinery and ice-making apparatus are among the leading items at present, with contractors' outfits in good demand.

In the farther south there is some dissatisfaction over the low price of cotton, which is causing growers to hold their crops. This naturally is tending to produce a sluggish state of affairs, which will not be relieved until the staple moves to market and money becomes plentiful. It is hoped that prices will soon be on a level which will justify the growers in selling.

The Kentucky Wagon Mfg. Company, Louisville, has purchased the Electric Vehicle Company, Louisville, and has moved the plant from Preston and College streets to Third and K streets, where the company has had a large farm wagon factory. The Kentucky company has been equipping a department for the manufacture of motor truck bodies, and will now undertake the production of electric trucks of the design of the Vehicle company, on a large scale. The extent of the development has not yet been determined. H. B. Hewett, president of the Electric Vehicle Company, and others of its officers have joined the Kentucky Wagon Mfg. Company.

The Shields Steam Specialty Company, Louisville, has been incorporated with a capital stock of $10,000, and George W. Shields, A. J. Breedlove and T. Q. Munce are the incorporators. The concern will equip a machine shop and later a foundry for the manufacture of boiler-room specialities, such as valves, joints

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couplings, etc. Brass and iron castings will be required. George W. Shields will be president of the company, which has not yet decided upon a location.

L. R. Veatch & Co., Louisville, are gradually enlarging a shop at 110 West A street for the repair and remodeling of flour-milling machinery. A Universal wood-worker was recently installed, and other equipment will be bought later. The concern is working night shifts.

Work has begun on the five-story addition to the plant of the Louisville Lead & Color Company, Fifteenth street and Portland avenue. The concern will require milling machines, which will be operated by electric motors; a heating plant and an automatic sprinkler system. J. D. Cooper is superintendent.

It has been announced that the plant of the Milton-Peter Mfg. Company, Louisville, which was destroyed by fire last week, will be rebuilt. Power equipment, machine tools and wood-working machinery will be required. The company manufactures tables.

The Board of Public Safety of Louisville has recommended the equipment of an automobile repair shop to take care of the municipal motor cars which have been put in service within the past few years. The fire department is to be operated by motor trucks in the near future.

The Henry Vogt Machine Company, Louisville, reports the sale of an unusually large number of ice and refrigerating machines. The Standard Oil Company has made several large purchases of refrigerating equipment from this concern. The boiler demand is also good.

The Harlan-Lowe Milling Company, Bardwell, Ky., will erect an elevator.

The Warren County Loose Leaf Tobacco Warehouse Company, Bowling Green, Ky., will erect a plant for prizing tobacco for packing in hogsheads. Presses and power equipment will be required.

The Gibson-Carr Company, Middlesboro, Ky., is planning the development of 200 acres of coal land on Tye Fork near Anchor, Ky.

The Martin's Fork Coal Company, Harlan, Ky., has been organized with $40,000 capital stock for the purpose of opening coal mines in Harlan county. B. F. Unthank represents the company.

Huffman & Call have purchased a controlling interest in the Mountain Water Company, Pikeville, Ky., and are improving the system. New mains will be laid and the power plant will probably be enlarged.

The United Water & Light Company, Somerset, Ky., plans the installation of an additional engine in its electric light plant. The present plant, it is stated, is badly overloaded because of the rapid increase in business.

The Cincinnati Elevator Works, Covington, Ky., has filed articles of incorporation with $5,000 capital stock. Margaret J. Quigley, Fred N. Meyer and Harry C. Ahlers are the incorporators of the company.

The Tom Creek Oil & Gas Company, Paintsville, Ky., has been organized with $35,000 capital stock by John C. C. Mayo, Finley E. Fogg, George F. Copland and others.

C. V. Bartels, Louisa, Ky., has organized the Reuben Fork Oil Company with $6,000 capital stock, and plans immediate operations in the Big Sandy alley.

The Nicholasville Ice & Cold Storage Company, Nicholasville, Ky., has been organized by A. Kenney with $30,000 capital stock and a plant is to be erected.

Russell Birkeau, of Cumberland Gap, Tenn., is moving his wagon plant to Middlesboro, Ky., where he has been given a site by the Board of Trade of that city. Some enlargements probably will be made.

H. M. Byllesby & Co., Chicago, are having a survey made of the Cumberland Falls on the Cumberland River near Williamsburg, Ky., with a view to erecting a hydroelectric power plant, should the result of the survey be favorable. It is expected that this will be completed within a few weeks, and owing to the fact that a number of large cities, including Lexington, Ky., Knoxville, Tenn., and Cincinnati are within reaching distance, it is thought that the plant would be a feasible proposition. Cumberland Falls has a drop of 60 ft.

E. S. Hitchens, Olive Hill, Ky., is chairman of a committee of the Carter Fiscal Court which has been empowered to purchase a rock crusher and other machinery to be used in road-building.

The City Council of Covington, Ky., is contemplating the purchase and improvement of the plant of the Kenton Water Company. The council has rejected bids recently taken for a garbage reduction plant and new bids are to be advertised for.

The Chesapeake & Ohio Railroad has secured a permit for the erection of a powerhouse in Covington, Ky. It will furnish power for the operation of the telegraph lines along its lines, and will be equipped with a considerable amount of electrical apparatus.

The Henderson Brewing Company, Henderson, Ky., has let a contract for the installation of a new power plant to the Brownell Company, Dayton, O. Three 72 in. x 18 ft. boilers are to be installed, having an aggregate capacity of 600 hp. The battery of boilers, instead of being supported on brick walls, will be suspended by heavy steel beams, resting on iron columns, the idea being to permit free expansion and contraction. The company plans an increase in the capacity of its ice plant.

The Owensboro Buggy Company, Owensboro, Ky., has let a contract for the erection of a three-story addition to its plant. Contracts for the necessary wood-working machinery will be let in the near future.

Tyler Stone, Sturgis, Ky., is interested in the plan to establish a system of waterworks in that town.

It is reported that the McCowen-Probst-Menau Company, Salem, Ind., which manufactures plumbers' supplies, is contemplating a considerable addition to its plant. W. G. Probst is superintendent.

The Paxton Lumber Company, Bristol, Tenn., will erect a planing mill. It has a power plant at present and only woodworking equipment will be needed.

Andrew Smalling, Bristol, Tenn., plans the erection of a bandmill and the development of a tract of timber in the Holston mountains near Bristol.

Johnson City, Tenn., is completing plans for its proposed water system, and will be ready to begin construction work in a short time. Water will be piped from Big Blue Springs, a distance of 12 miles.

W. D. Frazier, Columbia, Ky., is planning the erection of a wood-working plant at Algood, Tenn. Columns will be the principal line manufactured.

The Anderson-Tully Company will erect a large addition to its box factory at Memphis, Tenn. The cost of the plant will be about $25,000. C. H. Allen is in charge.

W. C. Hunt, Tullahoma, Tenn., is organizing a company for the erection and operation of an ice factory with an initial capacity of 20 tons.

The Harris Municipal Incinerator Company will, it is reported, establish a plant for the manufacture of garbage incinerators at Nashville, Tenn. The Nashville Industrial Bureau is authority for the report.

Obion, Tenn., will build a waterworks system. Bids are to be received until November 21. C. H. Jenks, Union City, Tenn., is the engineer in charge.

The Imperial Realty Company, Knoxville, Tenn., has announced plans for the erection of a steel-frame hotel to cost $350,000. Work will begin January 1.

A central dairy plant, to cost $50,000, is to be built at Nashville, Tenn. A. P. Foster, Nashville Industrial Bureau, is interested.

The White Adding Machine Company, Nashville, Tenn., has filed articles of incorporation with $400,000 capital stock. Adding machines and other commercial devices will be manufactured. L. Allen Cook, H. B. Thomson, Sigfried Janson, Benjamin F. Barry and others are the incorporators.

The Bon Jellico Coal Company, Knoxville, Tenn., has been organized by Arthur Grozes, F. F. Floyd, W. J. Everett and others for the purpose of developing 1250 acres of coal lands in Whitley county, Ky.

The Severance Mfg. Company, Nashville, Tenn., which produces gas plants for private residences, is planning the erection of a branch plant at Jacksonville or Pensacola, Fla. V. J. Severance is head of the company.

The Columbian Paper Company, Bristol, Tenn., is planning the increase of the capacity of its mill. It is said that the defeat of reciprocity with Canada has strengthened the position of the producers of wood-pulp paper.

The Fayetteville Grain Company, Fayetteville, Tenn., has been organized with J. W. Hardin as manager. Conveying machinery operated by electricity will be installed in an elevator secured by the company.

The Connor & Wallace Machine & Foundry Works is the name of a new corporation in Columbia, Miss. Claude Wallace is manager and M. W. Conner secretary and treasurer.

The South Atlantic Blow-Pipe & Sheet Metal Company has filed articles of incorporation at Atlanta, Ga. Its capital stock is $50,000 and the company will take over the plant of the Standard Blower & Metal Mfg. Company. T. H. McMillan, Savannah, Ga., is one of those interested.

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Manchester, Ga., contemplates issuing bonds for the erection of an electric light plant.

The Dominion Metal Products Corporation, Roanoke, Va., has been incorporated with a capital stock of $150,000 to make corrugated culverts and a general line of sheet metal products, including ceilings, roofing, shingles, eave trough, etc. A factory building, 50 x 200 ft., will be erected. J. B. Betts is president and general manager and P. H. Tucker is secretary and treasurer.

St. Louis

ST. LOUIS, MO., October 28, 1911.

The machine tool business continues to show the order of improvement which has been noted recently, the new sales and inquiries being confined to single tools, the requirements of small establishments and some second-hand stuff. There is still a dearth of inquiries from the larger concerns and there is, apparently, little likelihood of their appearance in the market, except in some very special instances, until there is a more definite state of affairs generally.

The city of St. Louis is a prospective customer during the next year or two for some 68,000 water meters, it being the declared intention of the Water Commissioner, under authority already existing, to install meters for all consumers in the city with a view of economizing the consumption which has reached the emergency capacity of the pumping station. Arrangements are also under way for the immediate expenditure of $160,000 in improving and extending the 36-in. main service of the city. Additional 36-in. mains are also planned to cost in the vicinity of $1,000,000 during the next two years. The necessary funds are already in hand and only municipal legislative authorization is necessary for the work. The total water department extension expenditures of the next three or four years will run to $4,500,000, of which $1,000,000 will go to boiler and pumping equipment.

The city of Lamar, Mo., voted October 24 to issue $70,000 of bonds for the construction of a municipal light and water plant. The plans will not be completed until the legality of the election is fully established, to the satisfaction of the bond buyers.

The Prest-O-Lite Company, Indianapolis, Ind., has completed plans for the construction of a branch factory and charging station in St. Louis. The plant will be one of complete and independent equipment, apart from the Indianapolis factory. It will cost $50,000.

The city of Webster Groves, Mo., a suburb of St. Louis, voted October 28 to issue $75,000 of bonds for the completion of its water plant and system. The proposition was renewed from September 19, last, when it was defeated by 6 votes.

The Southern Railway has announced that it will build an 18-stall round house at East St. Louis and will also establish a repair plant which will require 200 skilled mechanics and twice as many laborers. The plant will cost about $200,000 with its mechanical equipment.

The LeSieur Vacuum Can Company, a $100,000 corporation, will erect at once a plant in East St. Louis for the manufacture of milk cans and similar receptacles under new patents.

The Morrison Milling Company, Morrison, Mo., has been incorporated with $100,000 capital stock by Arnold Hammert, Fred Toole, and August Wells and will erect a flour milling plant at once.

The Moore Continuous Safety Rail Company, with $20,000 capital stock has been incorporated at Galesburg, Ill., by R. D. Moore, L. W. Sanborn, E. R. Drake, W. E. Doyle and R C. Rice, and will equip a plant for the manufacture of a patented rail, switch and crossing.

The C. L. Clark Mfg. Company, Elgin, Ill., has been incorporated with $50,000 capital by C. L. Clark, W. H. Kimball and H. H. Simons and will equip a manufacturing plant at once.

The Berry-Reed-Summerlin Company, with $15,000 capital stock has been incorporated at Mattoon, Ill., and will at once equip a manufacturing plant.

The American Dartium Steel Castings Company, with $150,000 capital stock has been incorporated at St. Joseph, Mo., by Edward Richards, John Tompson and Eugene W. Colville and will equip a plant at once for the manufacture of steel castings

The Springer Elevator Company, with $50,000 capital stock, has been incorporated at Springertown, Ill., by C. R. Barton, R. Barton and G. M. Barton and will build and equip a grain elevator at once.

The Globe Furniture Mfg. Company, Kansas City, Mo., with $100,000 capital stock, has been incorporated by J. A. Dillon, L. F. McClure, J. A. Edwards and others and will build and equip a furniture manufacturing plant at once.

The Plantation Equipment Company, St. Louis, has been organized by Wm. C. Zelle and Wm. B. Brennecke of St. Louis, with a capital stock of $100,000 to engage in the manufacture of gasoline power, agricultural machinery and implements.

J. A. Schroer & Co., coopers, St. Joseph, Mo., have obtained a portion of the property of the Ambrose Foundry Company and will build a cooperage plant on the site.

The American Furnace Company, St. Louis, is about to erect a two-story factory building on Morgan street at a cost of $16,000.

The American Beet Sugar Company is preparing plans for the improvement of its Grand Island, Neb., plant, at an estimated cost of from $250,000 to $300,000.

The Union Pacific Railroad Company has let the contract for a nine-stall round house at Sidney, Neb., to replace the one recently destroyed by fire. A larger round house will be built later.

Texas

AUSTIN, TEX., October 28, 1911.

The machinery trade in Texas continues very satisfactory, according to statements of dealers, and the same is true in Arizona and New Mexico. In Mexico the situation continues to improve and there is a noticeable increase in the orders for mining machinery. The activity in the development of the oil fields of that country is also creating a very large demand for material for storage tanks and pipe lines.

Contract will soon be awarded for the construction of a complete sewer system for Celina, bonds for the purpose having been issued.

The Houston Ice & Brewing Company, Houston, will install a new ice factory at Bryan. It will also erect modern bottling works which will be operated in connection with the former plant. The cost of these improvements will be about $50,000.

The Farmers Broom Factory has been organized at Donna for the purpose of installing a broom manufacturing plant. The incorporators are O. L. Wilson, T. E. Delbridge and J. A. Collier.

The Giddings Creamery Company has been reorganized under the name of the Giddings Creamery-Ice Mfg. Company with a capital stock of $20,000. It will install an ice factory and cold storage plant at Giddings, Texas. It also contemplates putting in an electric light plant for furnishing the town with lights.

The Eagle Pass Ice Mfg. Company, which has been organized at Eagle Pass with a capital stock of $20,000, will install an ice plant.

The Balmorhea-Toyah Valley Irrigation Company is arranging to construct a system of irrigation in the Balmorhea section of the Toyah valley to cost about $300,000. The plans involve the erection of a dam which will cost about $200,000 and the construction of a large system of canals and laterals. The financial agents of the company are Cobe McKenna & Co, Chicago. Steps have been taken to form a water users' association, taking in all the land owners that are to be benefited by the reservoir and irrigation system. The lands are to be bonded for the payment of the cost of constructing the dam and equipping the system.

The Yoakum Improvement Company will install a new 500-hp. engine and a new 150-kw. 60-cycle dynamo in its electric light plant at Yoakum. It will also make improvements to its waterworks system. J. W. Greer is superintendent.

M. G. O'Neil, civil engineer of Dallas, will make a survey and estimate of the cost of constructing a new waterworks system for Mount Vernon. He will submit his report to the city council when the work is finished and further action towards consummating the proposed improvement will be taken.

The equipment for the proposed electric light, waterworks and ice plants that are to be installed by Geo. T. Clark, of Chicago, at Menard, has arrived on the ground. Improvements are in progress.

Paul Garrett and associates will install a flour mill and cotton gin at San Angelo, at a cost of about $35,000. The flour mill will be finished in time for operation when next season's wheat crop is harvested.

The People's Ginning Company has been formed at Falfurrias with a capital stock of $12,000. The in-

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corporators are R. E. McBryde, J. H. Allen, H. L. Inselmann and others.

The Chamber of Commerce of Bowie is promoting the organization of a company that will install a large plant for the manufacture of roofing tile, vitrified and fire brick.

The Tamilina Milling Company has been formed at San Antonio with a capital stock of $60,000. Incorporators are B. M. Martinez, F. A. Chapa and others.

The Austin Corners Gin Company has been formed at Rockwall with a capital stock of $6,000. The incorporators are W. C. Bishop, I. J. Austin and T. B. Ridgell.

The Worth Oil Company has been formed at Fort Worth with a capital stock of $50,000 for the purpose of boring oil wells. The incorporators are A. H. Carrigan, Fred W. Householder and J. M. Clover.

Wade Herren will install an irrigation pump and 35-hp. engine at a well that he is putting down near Deming, N. M.

The Bordo Ice & Power Company will install a 75-ton ice factory at Tampico. C. C. Freston is chief engineer.

The development of the oil fields in the Tampico region of Mexico has created an enormous demand for iron storage tankage material. The Huasteco Petroleum Company is erecting 100 additional tanks, each of 55,000 barrels capacity.

The Mexican Eagle Petroleum Company is erecting 50 iron tanks, each of 55,000 barrels capacity, at the junction of the Tampico-Tuxpan canal, about three and a half miles from Tankville. The Tampico Petroleum Company, which is the Mexican organization of the Texas Company, is putting up a number of large tanks three miles up the Panuco River from the Mexican Eagle Petroleum Company's tank farm. There is much activity on the part of other companies in erecting oil storage tanks and laying pipe lines in the Tampico district.

The Ray Central Copper Company has definitely decided to install a 1500-ton mill at its property near Ray, Ariz.

C. W. Lerchin of Kelly, N. M., will install new machinery upon mines that he recently purchased in the Copper Basin district, Arizona.

The Inspiration Copper Company of Miami will soon have the plans finished for its proposed 5000-ton mill near Miami, Ariz.

The Treasure Mining & Reduction Company will install an aerial tramway at its property near Mogollon, N. M., and will double the capacity of its mill.

The El Carmen Mining Company of El Carmen, State of Durango, Mexico, will erect a mill at its property there. F. C. Alley, whose address is El Carmen, is manager.

The Esmeralda-Parral Mining Company will install air compressor, boilers, hoists and other equipment upon its property near Parral, Mexico. Wm. P. Fairman of Philadelphia is president. Wade Armstrong of Parral is superintendent.

The Veta Colorada Mining Company of Parral, Mexico, will install new machinery and double the capacity of its mill in that district. G. J. Ashe of Knoxville, Tenn., is president.

The Pacific Coast

PORTLAND, ORE., October 24, 1911.

The machine tool market appears to be in a little better shape than a year ago, though there is no general activity. Occasional orders of some importance are coming out, but most of the tools sold are small, and orders for more than two or three machines are infrequent. The situation in other lines shows little change, the demand keeping about up to the recent average. Little improvement is expected before the first of the year, but conditions are favorable for a general revival in the logging and woodworking departments during the late winter and spring. The lumber trade, which has been rather quiet for nearly a year past, has improved materially of late, with a heavy shipping movement both by rail and water. The shingle market is demoralized, but a good many manufacturers are still in the market for new equipment. Pumping plants and waterworks supplies, small electric generators, motors, etc., are all in steady demand.

The machine shop of Hathaway Bros. at Corvallis, Ore., was destroyed by fire October 17, the loss being estimated at $6,000. The old structure will be replaced by a concrete building, and new tools will be purchased immediately and set up in temporary quarters.

The Olympic Portland Cement Company, Bellingham, Wash., is expected to be in the market for tools shortly, the contract for the shop building having been let.

Contracts are expected shortly for the buildings to be erected in this city by the Berlin Machine Works, Beloit, Wis.

The Colombia Engineering Works, this city, has a contract for a lot of riveted steel pipe for the 7-mile aqueduct of the Hood River Irrigation Company.

The Moran Company, Seattle, Wash., is starting work on two steel whaling steamers for the Canadian North Pacific Fisheries, the contract amounting to about $130,000.

The Vulcan Industrial Engineering Works has been incorporated at Seattle, Wash., with a capital stock of $1,500,000, by Wm. A. McDonald, J. Ivey and J. Himill.

The Twin City Woodworking Company, whose plant at Chehalis, Wash., was recently destroyed by fire, announces that it will rebuild in the near future.

The Puyallup Mill & Veneer Company, Puyallup, Wash., has announced its intention to replace its planing mill which was recently burned. A new 12-ft. band saw will be installed in the mill, and the box factory will also be increased.

The Northwestern Smelting & Refining Company, Ltd., Nampa, Idaho, is preparing to install a new plant, and has called for bids on the excavation.

The Holland-Cook Mfg. Company is rebuilding its wood-working plant near Tacoma, Wash., which was recently destroyed by fire.

The Clark Bros Company, Belmont, N. Y., manufacturer of sawmill machinery, engines, etc., has about completed a large distributing warehouse at Seattle, Wash. E. F. Mitchell, Coast manager for this company, has resigned, and the business is temporarily in charge of J. O. Bradney.

The Booth-Kelly Lumber Company is preparing to install a new bandsaw mill with a daily capacity of 175,000 ft. at Springfield, Ore.

The Smith-Powers Logging Company, Marshfield, Ore., is making a test of electric power for logging work. If the experiment succeeds, a central power plant will be installed, furnishing power to all the company's camps.

The Shultz Belting Company, St. Louis, Mo., has established a permanent office at 49 First street, this city, covering the entire Pacific coast. C. E. Grigg is in charge.

Several new machines are being installed at the mill of the Coquille, Ore., Lumber Company.

Eastern Canada

TORONTO, October 28, 1911.

The currents of trade continue to run strong in all branches of enterprise. There is no unemployed force to speak of, and such men as are out of work are either incapable or lazy. The cry of most of the manufacturing industries is for more men. The puzzling discrepancy between the relatively small increase in population as indicated by the census and as foreshadowed by the immigration figures is causing a closer watch to be set upon the migratory population.

The Customs Department at Ottawa is receiving numerous requests from United States manufacturers for special valuations on articles made by them, the object being to fortify themselves with official information serviceable for the establishing of branch factories in Canada. Having the department's quotation of valuation, they know exactly what competitors shipping from the United States would have to overcome. Further, the valuations are important for American branch factories in Canada importing some of their material in a raw or more or less finished state from the other side of the border.

The census shows that the increase in population in Eastern Canada is wholly in the manufacturing centers.

Several towns and cities in Canada are acquiring large areas of land to dispose of in parcels large enough for manufacturing sites, which are to be given free in consideration of the putting up and operating of the factories. The City Council of Ottawa is now considering the question of acquiring land for this purpose. The town of Berlin, Ont., is also acquiring land for free factory sites.

Agents of the various shipbuilding companies that

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tendered for the work of building vessels for the Canadian navy are impatient to know what the new government is going to do about the business. Each of the companies has $100,000 on deposit with the Government.

The works of the Canadian Car & Foundry Company at Turcot, near Montreal, are to have their capacity doubled so as to be able to turn out 125 passenger cars per annum. The shops for all-steel cars at Dominion, just outside Montreal, are also to be enlarged to 50 per cent. more capacity.

The plant that Canadian Steel Foundries, Ltd., is erecting at Longue Pointe, Montreal, will cost about $1,000,000. It will be ready for operation at the end of the year. The capacity of the plant will be 25,000 tons of steel castings per year.

Goold, Shapley & Muir, Brantford, Ont., are installing the water system for fire protection at the Jordan Sanitarium at River Glade, N. B.

Tenders will shortly be asked for the supplying of a fire pump, gasoline engine and a producer gas engine in connection with the water works of the municipality of Ridgetown, Ont.

Tenders will be received to November 16 for the putting in of sewers, pumping station, etc., for the town of Sudbury, Ont.

The London Street Railway Company, London, Ont., will take up the question of purchasing equipment for power house, extension of lines and building of cars.

Tenders are called to November 8 for the construction and erection of 150-hp. horizontal return tubular boilers at three points on the National Transcontinental Railway. Tenders are to be sent to the secretary, P. E. Ryan, Ottawa.

Plester & Parker, Galt, Ont., are enlarging their factory and will install additional machinery.

M. E. Blaiser Machine Company, Utica, N. Y., will establish a branch factory at Niagara Falls, Ont.

City Engineer Sifton, Hamilton, Ont., is preparing plans for two transformer stations, for municipal electrical system, one to cost $8,000, the other $10,000.

Tenders will be called shortly for the hydro-electric distribution system at the main transforming station, Hamilton, Ont., with heating system at the main transforming station, with heating, lighting and plumbing, about $16,000; station equipment, including transformers, switches, switchboards, indicating and recording instruments, about $40,000.

The Standard Silver Plate Company, Toronto, will build a factory to cost $75,000.

A branch factory of the Beaver Mfg. Company, Birmingham, Eng., is to be opened at Niagara Falls, Ont. Aluminum novelties will be turned out.

The nail and wire mill which the Dominion Steel Corporation is erecting at Sydney, N. S., is steadily progressing.

The Dominion Axle & Forge Works, Guelph, Ont., has begun the construction of its factory.

The Quebec Pulp & Paper Company, Montreal, has been formed with a capital stock of $15,000,000. It proposes to construct and operate large mills in the Province of Quebec.

It is reported that the Canadian Northern Railway Company will establish large repair shops in Ottawa.

The ratepayers of Dryden, Ont., have approved a by-law giving municipal privileges to the Dryden Timber & Power Company, in consideration of the latter's establishing a pulp mill and power plant there.

The Canada Cement Company, Montreal, will add a number of new plants at various points throughout the country.

The Hamilton Gaslight Mantle Company, Hamilton, Ont., has been incorporated with a capital stock of $40,000.

The M. E. Blazier Machine Company, Utica, N. Y., which manufactures steaming and pressing apparatus, has established a Canadian branch plant at Niagara Falls, Ont.

The Toronto Power Company is receiving bids for an extension, of cut stone, to be made to its power house at Niagara Falls, Ont. Bids for equipment will be called for later.

The Burwill Works, Ltd., Brockville, Ont., manufacturers of cream separators, are erecting a factory addition.

The Cossitt Company, Brockville, Ont., manufacturer of scales, etc., is erecting a two-story addition to its plant.

Western Canada

WINNIPEG, MAN., October 28, 1911.

The Western coal strike which has lasted from early in April is now ended, as the result of the mediation of the new Minister of the Interior. It had a dragging effect upon industry, especially in the Far West, the lead smelters in Southern British Columbia being forced to close, and the silver-lead mines being likewise put out of operation. A strike that has been in progress for a fortnight in the West is that of the machinists in the shops of the Grand Trunk Pacific Railway Company. The general conditions of trade and industry in that part of the country are, however, excellent.

Tenders are to be called shortly for the supplying of gate valves for the water system of Point Grey, B. C.

The Canadian Pacific Railway Company is preparing to electrify the Rossland-Trail section of its line in British Columbia.

T. J. S. Skinner, Calgary, Alberta, will erect a large block there, to cost $500,000.

Up to November 15 tenders will be received by W. D. Spence, City Clerk, Calgary, Alberta, for the supplying of materials for street railway.

The City Commissioners of Saskatoon, Sask., will receive tenders up to November 17 for the furnishing and erecting of the superstructure over the Nineteenth street subway.

Up to December 15 tenders will be received by J. W. Bradley, Secretary-Treasurer of Neepawa, Man., for equipment and material for water works and sewage disposal plant.

The Agutter?Griswold Company, a large manufacturer of steel boxes, switch and panel boards and other electrical apparatus, proposes to start a factory in Vancouver, B. C.

G. M. Gibbs, Vancouver, B. C., is planning for the establishment of a rolling mill plant on the Fraser River.

The Massey-Harris Company, manufacturer of farm implements and machinery, Toronto, will erect a large warehouse at Swift Current, Sask.

It is stated that the Powell River Paper Company, whose head office is in Vancouver, B. C., will spend $1,000,000 to add to the capacity of its new plant on Powell River. It has already expended $2,500,000 on works and equipment.

The North Battleford Mfg. Company, North Battleford, Sask., is about to enlarge its plant.

The town of Vermilion, Alberta, has awarded the contract for the construction of its electric power house to Ferrell & Walker.

In the municipal elections of January the ratepayers of Vancouver, B. C., will be asked to approve money by-laws authorizing the raising and expenditure of $2,000,000. Of this sum $550,000 will be for a bridge across False Creek.

The Canada Iron Corporation will add to its works at Fort William, Ont., a gas-producing plant to facilitate the drying of the molds used in pipe making.

The Riverside Lumber Company, Calgary, Alberta, is about to erect a box factory as an addition to its plant. It is stated that the factory will employ about 100 men.

The Keizer Brick Machine & Mfg. Company has been formed in Winnipeg, with a capital stock of $200,000. The directors are Mayor Evans, J. W. Horne, D. A. Keizer, J. B. Stephens and H. A. Lightcap. Mr. Keizer is the inventor of the machine, which has a capacity of 21,600 pressed bricks per hour.

The Saskatchewan Bridge & Iron Company, Ltd., has been incorporated at Moose Jaw, Sask., with a capital stock of $250,000. It is practically a reorganization of the Moose Jaw Machine Company, Ltd.

Hoyme & Co. contemplate establishing a paint manufacturing plant at Camrose, Alberta.

The Hamilton Steel Company has secured options on a large waterfront site at New Westminster, B. C., for industrial purposes.

The planing mill and machinery of the Dryden Timber & Power Company, at Dryden, Ont., was burned October 20. Only a few days ago the ratepayers there passed by-laws granting certain privileges to the company, including exemption from taxation for ten years, and the fixing of the school assessment at $60,000 for ten years. A large pulp mill is being erected.

Government Purchases

WASHINGTON, D. C., October 30, 1911.

The Paymaster General, Navy Department, Washington, will receive bids until November 14, under schedule 4029, for turret turning equipment, one combined stake riveter and punch, one electrolytic oxygen-hydrogen generating plant, gun firing equipment and interior communication motor generators, and under schedule 4044 for furnishing and installing one steam pressure disinfector.

The United States Engineer Office, Memphis, Tenn., will open bids November 24 for one locomotive crane for the Mississippi River Commission.

The Isthmian Canal Commission, Washington, will open bids at an early date for furnishing spillway gate machines and pumps for all spillways for the Panama Canal, including gate machine complete, motors and pumps.

The Bureau of Yards and Docks, Navy Department, Washington, opened bids October 24 as follows:

Schedule 3946, class 41, one 21-in. turret lathe.—Bidder 53, Lunkenheimer Company, Cincinnati, Ohio, $3,145; 55, Manning, Maxwell & Moore, New York, $3,150; 61, Niles-Bement-Pond Company, New York, $3,485.

Schedule 3966, one die sinking machine.—Bidder 55, Manning, Maxwell & Moore, New York, $840; 65, Pratt & Whitney Company, Hartford, Conn., $1,174.

Schedule 3967, one anchor windlass with engine complete.—Bidder 60, Newport News Shipbuilding & Dry Dock Company, Newport News, Va., $18,795; 87, Williamson Bros. Company, Philadelphia, Pa., $18,250.

Schedule 3968, one steering gear.—Bidder 41, Hyde Windlass Company, Bath, Me., $33,280; 60, Newport News Shipbuilding & Dry Dock Company, Newport News, Va., $32,076 and $32,376; 87, Williamson Bros., Philadelphia, Pa., $28,275.

Schedule 3969, one direct-current motor, two hoisting and rotating equipment and five 3-hp. motors.—Bidder 35, General Electric Company, Schenectady, N. Y., $18,326; 60, Newport News Shipbuilding & Dry Dock Company, Newport News, Va., $18,040.

Schedule 3982, one double back geared lathe.—Bidder 10, Bradford Machine Tool Company, Cincinnati, Ohio, informal; 26, Frevert Machinery Company, New York, $668 and $718; 29, Fairbanks Company, Washington, D. C., $719; 36, Garvin Machine Company, New York, $800 and $823; 55, Manning, Maxwell & Moore, New York, $699; $1,181, $717, $908 and $895; 61, Niles-Bement-Pond Company, New York, $716, $778 and $838; 67, Prentiss Tool & Supply Company, New York, $1,049 and $1,124.

Class 42, one pipe threading machine.—Bidder 26, Frevert Machinery Company, New York, $664; 29, Fairbanks Company, Washington, D. C., $698.20; 46, Kemp Machinery Company, Baltimore, Md., $559.50 and $669.50; 55, Manning, Maxwell & Moore, New York, $699, $988, $1,734 and $1,220; 58, Manhattan Supply Company, New York, $1,345; 61, Niles-Bement-Pond Company, New York, $1100; 83, Vermilye & Power, New York, $451.25.

Schedule 3984, two 50-kw. turbo generating sets.—Bidder, 35, General Electric Company, Schenectady, N. Y., $8650; 47, Kerr Turbine Company, New York, $2,263.90; 7, Benedict & Burnham Mfg. Company, New York, $6,200; 92, De Laval Steam Turbine Company, Trenton, N. J., $2,815 and $3,375.

The Wheland Machine Works, Chattanooga, Tenn., which has been merged with the Chattanooga Machinery Company under the name of the Wheland Company, has been manufacturing sawmill equipment for many years. It was started at Athens, Tenn., in 1866, its plant being moved to Chattanooga in 1874. It was conducted as a partnership until 1900, when it was incorporated with $100,000 capital stock. This has been increased, with the change of name and the taking over of the Chattanooga concern, to $200,000, a petition for the amendment of its charter having been recently filed. The concern has been developing its foreign trade considerably of late, and is shipping sawmill equipment to the Argentine Republic, Brazil, South Africa and Australia. G. W. Wheland is at the head of the company.

The Atlas Car & Mfg. Company, Cleveland, has recently received the following orders for industrial cars and locomotives: Four 3-phase 20-ton locomotives for transferring coke quenching cars at the new coke plant of the Indiana Steel Company, Gary, Ind.; three 100-ton ore cars and one storage battery locomotive crane for subsidiaries of the United States Steel Corporation; 400 3-ton industrial cars for a manufacturing plant on the Western coast; 3 mining locomotives for a Western company, and several special electrically driven scale larry cars for traction companies. The company also reports that it is receiving a good volume of export business in mining cars for shipment to Mexico and Central America, and that a good volume of inquiries from various sources is pending.

Announcement is made that the annual convention of the American Boiler Manufacturers' Association will be held at the St. Charles Hotel, New Orleans, La., March 11 to 14, 1912.

Trade Publications

Grinding and Polishing Machinery.—Ransom Mfg. Company, Oshkosh, Wis. Catalogue J. Size, 6 x 9 in.; pages, 24. Devoted to a line of belt-driven grinders and buffers. For the most part two pages are given to each tool, the engraving being on the left-hand page with a brief description and specifications on the facing page. Among the tools described is the No. 6 buffing lathe which was illustrated in *The Iron Age*, June 15, 1911.

Sheet Metal Working Machinery.—Fred J. Swaine Mfg. Company, Seventh and O'Fallon streets, St. Louis, Mo. Catalogue. Size, 6 x 9 in.; pages 198. This is the company's 1911 catalogue describing and illustrating a line of machinery, presses and dies for working sheet metal. These include double crank straight sided, inclinable, punching, sliding, riveting, power and clutch presses. Other machines shown include double seaming and crimping machines, gang slitters, power rolls, rotary forming and punching machines and a machine for oiling metal sheets to prevent rusting. The various parts of the presses such as the automatic bolt clutch, the fly wheel, crankshaft, slide and slide connections, power lifter, counters and dies of various types are illustrated and briefly described. Eight pages are given over to half tone engravings showing parts produced on the various machines listed.

Turret Lathes.—Gisholt Machine Company, Madison Wis. Pamphlet, entitled "The Manufacturer and the Gisholt." Calls attention to the wide range of work which can be finished on the turret lathes of this company. An elevation and a plan view of one of these lathes is given and this is followed by a number of pages containing half tone reproductions of the various pieces that can be turned out in this machine. Mention is also made of the company's boring mills and its universal tool grinder.

Storage Batteries.—Gould Storage Battery Company, 341 Fifth avenue, New York, N. Y. Bulletin No. 12. Size, 8 x 10 in.; pages, 12. Describes the storage battery installation in the Detroit River tunnel and the auxiliary regulating apparatus used to supply current to the electric locomotives employed for hauling the Michigan Central trains through the tunnel. One of the especially interesting features of the installation is the wide fluctuation in the load and the heavy peaks.

Steam Turbines.—The Kerr Steam Turbine Company, Wellsville, N. Y. Catalogue No. 19, superseding bulletin No. 18. Size, 6 x 9 in.; pages, 48. Is a thorough treatise of the theory, construction, uses and advantages of small steam turbines for driving generators, pumps, blowers and other small high speed machines. Complete dimension tables of the various sizes are included.

Hoisting Engines.—Williamson Brothers Company, Cumberland street and Aramingo avenue, Philadelphia, Pa. Loose leaf catalogue. Illustrates and describes the various types of hoisting engines which this company builds. These include double-cylinder engines with one and two friction drums and also a derrick swinging attachment and with the boiler mounted on the same base as the engine or separately. Electric hoists with one and two friction drums and a belt hoist of the same type are also shown.

Lathes.—Niles-Bement-Pond Company, 111 Broadway, New York, N. Y. Pamphlet. Size, 9 x 12 in.; pages, 27. Devoted to the various styles of heavy engine and gun lathes built by this company. These include double and triple back-geared engine lathes with swings of from 24 to 36 in. for the double type and 36 in. for the latter style, geared head engine lathes with swings of from 42 to 72 in. and large engine lathes, the minimum swing of which is 84 in. Mention is also made of gun lathes having swings of from 53 to 108 in. The various groups of tools are briefly described and the text is followed by engravings of the different lathes making up the line.

Lathes.—The Acme Machine Tool Company, Cincinnati, Ohio. Loose leaf catalogue. Calls attention to a line of turret machinery which includes combination turret lathes having swings of 14, 16, 18 and 20 in. and equipped with plain and friction geared heads. In making up the catalogue one leaf is given to each tool with an engraving at the top followed by a condensed description and a brief table of specifications. Space is also given to two types of screw machines and a number of accessories such as boring, pointing and turning tools; tool, clamp and die holders and collets, bushings and rings. Among the various tools illustrated are a 2¼ x 11 in. screw machine with power feed to the cut-off cross slide and a 2¼ x 26 in. combination turret lathe, illustrated descriptions of which appeared in *The Iron Age*, May 19, 1910, and January 26, 1911, respectively.

Metal Working Machinery.—The Garvin Machine Company, Spring and Varick streets, New York City. Catalogue D A, superseding catalogue D. Size, 6 x 9 in.; pages, 92. Illustrates and describes a line of metal working machinery which includes profiling machines, duplex and vertical spindle millers, a universal cutter and surface grinder; vertical, horizontal and automatic tapping machines; drills of various types, cam millers, die slotters, a hole grinder and a rapid screw slotting machine. Illustrated descriptions of the No. 3 duplex miller and the No. 2 hole grinding machine appeared in *The Iron Age* July 21, 1910, and July 27, 1911, respectively. In describing the machines the text is supplemented by numerous illustrations showing various parts. A three-page telegraphic code completes the catalogue.

Current Metal Prices.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Refined iron:
1 to 1⅞ in. round and square.... ℔ lb 1.70¢
1½ to 4 in. x ⅝ to 1 in..... ℔ lb 1.70¢
1½ to 4 in. x ¼ to 5-1. ..... ℔ lb 1.80¢
Rods—⅝ and 11-16 round and square. ℔ lb 1.80¢

Angles:	Cts. ℔ lb.
3 in. x ¼ in. and larger	1.80¢
3 in. x 3-16 in. and ⅛ in.	2.20¢
1½ to 2½ in. x ⅛ in.	1.95¢
1½ to 2¾ in. x 3-16 in. and thicker	1.85¢
1 to 1½ in. x 3-16 in.	2.00¢
1 to 1¼ x ⅛ in.	2.10¢
⅞ x ⅛ in.	2.15¢
¾ x ⅛ in.	3.35¢
⅝ in. x ⅛ in.	4.40¢
½ x 3-32 in.	

Tees:

1 in.	2.25¢
1¼ in.	210¢
1½ to 2½ x ¼ in.	1.90¢
1½ to 2½ x 3-16 in.	2.00¢
3 in. and larger	1.85¢
Beams	1.80¢
Channels, 3 in. and larger	1.80¢
Bands—1¼ to 6 x 6-16 to No. 8	2.00¢
Burden's "H. B. & S." iron, base price	2.95¢
"Burden's Best" iron, base price	3.15¢
Norway bars	3.60¢

Merchant Steel from Store—

	per lb
Bessemer machinery	1.70¢
Toe calk, tire and sleigh shoe	2.50@3.00¢
Best cast steel, base price in small lots	7¢

Sheets from Store—

Black	One pass, C.R. soft steel.	R. G. cleaned.
No. 16	℔ lb 2.35¢	2.75¢
Nos. 18 to 20	℔ lb 2.40¢	2.85¢
Nos. 22 and 24	℔ lb 2.45¢	2.95¢
No. 26	℔ lb 2.50¢	3.05¢
No. 28	℔ lb 2.85¢	3.30¢

Russia, Planished, &c.

Genuine Russia, according to assortment ..... ℔ lb 12 @14¼
Patent planished, W. Dewees Wood..... ℔ lb A. 10¢; B. 9¢ net

Galvanized

Nos. 12 and 14	℔ lb 2.65¢
No. 24	℔ lb 3.00¢
No. 26	℔ lb 3.20¢
No. 28	℔ lb 3.50¢

No 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—

Galvanized

Nos. 22 and 24	℔ lb 5.50¢
No. 26	℔ lb 6.00¢
No. 28	℔ lb 7.00¢

Corrugated Roofing—

2½ in. corrugated.	Painted.	Galvd.
No. 24 ℔ 100 sq. ft.	$3.75	$4.70
No. 26 ℔ 100 sq. ft.	2.85	3.90
No. 28 ℔ 100 sq. ft.	2.50	3.65

Tin Plates—

American Charcoal Plates (per box)

"A.A.A." charcoal:	
IC, 14 x 20	$6.65
IX, 14 x 20	7.90
A. charcoal:	
IC, 14 x 20	$5.60
IX, 14 x 20	5.70

American Coke Plates—Bessemer—

IC, 14 x 20	107 lb	$4.50
IX, 14 x 20		5.50

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8.70
IX, 20 x 28 with an 8 lb. coating	10.70

Seamless Brass Tubes—

List November 13, 1908. Base price, 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price, 18¢

Copper Tubes—

List November 13, 1908. Base price, 21¢

Brazed Brass Tubes—

List February 1, 1911. 19½¢ ℔ lb

High Brass Rods—

List February 1, 1911. 14⅝¢ ℔ lb

Roll and Sheet Brass—

List February 1, 1911. 14⅝¢ ℔ lb

Brass Wire—

List February 1, 1911. 14⅝¢ ℔ lb

Copper Wire—

Base price. Carload lots mill 13½¢

Copper Sheets—

Sheet copper hot rolled, 16 oz. (quantity lots) ..... ℔ lb 17¢
Sheet copper cold rolled, 1¢ ℔ lb advance over hot rolled.
Sheet copper polished 20 in. wide and under, 1¢ ℔ square foot.
Sheet copper polished over 20 in. wide, 2¢ ℔ square foot.
Planished copper, 1¢ ℔ square foot more than polished.

METALS—

Tin—

Straits pig..... ℔ lb 44 @45 ¢

Copper—

Lake ingot ..... ℔ lb 14 @14¼¢
Electrolytic ..... ℔ lb 13¾@14 ¢
Casting ..... ℔ lb 13¾@14 ¢

Spelter—

Western ..... ℔ lb 6¾@ 7¼¢

Zinc—

No. 9, base, casks... ℔ lb 8½¢ Open... ℔ lb 9¢

Lead—

American pig ..... ℔ lb 5 @5¼¢
Bar ..... ℔ lb 6¾@6½¢

Solder—

½ & ½, guaranteed..... ℔ lb 25½@26¢
No. 1 ..... ℔ lb 23½@24¢
Refined ..... ℔ lb 22¼@23¢
Prices of solder indicated by private brand vary according to composition.

Antimony—

Cookson ..... ℔ lb..@10½¢
Hallets ..... @10 ¢
Other brands ..... 9@ 9½¢

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 aluminum (guaranteed over 99% pure), in ingots for remelting..... 21¢ and 22¢
Rods and Wire..... Base price 31¢
Sheets ..... Base price 33¢

Old Metals—

Dealers' Purchasing Prices Paid in New York.

	Cents.
Copper, heavy and crucible	10.50 to 10.75
Copper, heavy and wire	10.25 to 10.50
Copper, light and bottoms	9.25 to 9.50
Brass, heavy	7.00 to 7.25
Brass, light	5.50 to 5.75
Heavy machine composition	9.00 to 9.25
Clean brass turnings	6.75 to 7.00
Composition turnings	7.50 to 7.75
Lead, heavy	3.75
Lead, tea	3.50
Zinc, scrap	4.00

NICHOLSON

We have had over forty years' experience in making Files and Rasps; we not only know what KIND of steel to use, but HOW to use it.

If NICHOLSON FILES did not hold their CUTTING edge—our order books would not hold so many CUSTOMERS.

We make over 3,000 different styles and sizes.

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